IASP TRANSLATIONS FROM ORIGINAL SOVIET SOURCES

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F 26 62

DECEMBER 1961

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The Law of Value and Prices in a Socialist Economy

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shed monthly by INTERNATIONAL ARTS AND SCIENCES PRESS / 156 Fifth Avenue, New York

problems of economics

DECEMBER 1962/VOL. IV, NO. 8

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SELECTED ARTICLES FROM SOVIET ECONOMICS
JOURNALS IN ENGLISH TRANSLATION

PROBLEMS OF ECONOMICS is a complete, literal translatio
without editorial comment, of articles selected from the follow
ing Soviet publications:

Voprosy Ekonomiki (Problems of Economics)
Planovoe Khoziaistvo (Planned Economy)
Mirovaia Ekonomika i Mezhdunarodnye Otnosheniia (World
Economy and International Relations)
Ekonomicheskaia Gazeta (Economic Gazette)
Vestnik Statistiki (Journal of Statistics)
Sotsialisticheskii Trud (Socialist Labor)
Biulleten' Nauchnoi Informatsii. Trud i Zarabotnaia Plata
(Bulletin of Scientific Information. Labor and Wages)
Vneshniaia Torgovlia (Foreign Trade)
Vestnik Leningradskogo Universiteta, Seriia Ekonomiki
(Journal of Leningrad University, Economic Series)
Vestnik Moskovskogo Universiteta, Seriia Ekonomiki (Journal
of Moscow University, Economic Series)
Nauchnye Doklady Vysshei Shkoly — Ekonomicheskie Nauki
(Scientific Papers of Higher Educational Institutions, Economi
Sciences)

Articles from other publications are included from time to tim
if they are considered of sufficient interest for translation.

PROBLEMS OF ECONOMICS is published as a service for
purposes of information and education. Twelve issues per ye
Subscription rate: $50.00 per year; $4.50 per copy. Publish
and Managing Editor: Myron E. Sharpe; Editor: Fred Ablin.

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INTERNATIONAL
ARTS
AND
SCIENCES
PRESS
156 Fifth Avenue, New York 10, N. Y.

Distribution of Productive Forces

Voprosy Ekonomiki, 1961, No. 6

Nemchinov

EORETICAL PROBLEMS OF THE RATIONAL DISTRIBUTION OF PRODUCTIVE FORCES

Vhereas the time factor is of the utmost impor- ce in the theory of economic development, the ce factor plays an analogous role in the theory of distribution of productive forces. Of course eco- nic development is not possible outside of space, t as rational distribution irrespective of time is o inconceivable.

The distribution of social production evolves as a ult of the historical development of the economy each given territory. The national wealth accumu- ed by preceding generations (in the form of indus- al structures and buildings, the housing fund, cul- ted land, as well as the work and vocational its of the population), which is unevenly concen- ted in various parts of the territory, exerts a tre- ndous influence on the choice of a site for the struction of new structures, plants and factories, for setting up new agricultural enterprises. netimes it is even supposed that the territorial centration of national wealth plays no less a role he distribution of social production than the dis- ation of natural resources.

Considering the fact that the concentration of na- al wealth is accompanied by a corresponding centration of skilled personnel and economy in duction costs and capital investments, then such opinion is just. However the attractive force of areas in which the accumulated national wealth is centrated is, as a rule, counterposed by another nd which leads to the gradual economic develop- nt of all the parts of the given territory. This trary trend is bound up with the constant neces- of including new natural resources in the na- al economic turnover, as well as ensuring itional jobs for the growing population.

This trend is growing constantly stronger due to nical progress, which is making it possible to quer space to an ever greater extent. As is well wn, steam transport played a prominent role in respect. The electrification of transport, the ation of united power grids, the laying of gas and lines, and the development of airlines, automo- transport, radio and television have even more rply reduced reduced space within a short historical period and made it possible to use the entire territory of the country more evenly for economic purposes.

The development of this tendency is also encouraged by the significant reduction in the costs of social production connected with the conquest of space in the process of economic turnover. The reduction in the costs of freight carriage and faster deliveries provides access to diverse types of raw materials and fuel located in distant places.

The conquest of space in the economic process is characteristic not only of the national economy as a whole but also of separate enterprises. The broad development of factory transport, the introduction of automated production lines in industry and the development of conveyor methods in construction serve as evidence for this.

Advancing towards communism with rapid technical progress, the tendency toward the economic conquest of space, especially in the field of production and economic ties, will manifest itself to an ever greater degree. Consequently constantly greater natural, manpower and economic resources will be drawn into the national economic turnover. At the same time the role of social territorial division of labor and the territorial organization of social production will grow.

The territorial, space principle of the organization and planning of social production plays an important role in our national economy even now. This is shown by the organization of economic councils in the economic administrative areas, as well as by a substantial enhancement of the economic role of the union republics. It is also indicated by the organization of 17 large economic-geographical areas in the system of long-range planning and the coming organization of long-term planning bodies in there areas.

The territorial principle, which has fully justified itself in the organizational structure of our Communist Party, is being realized to an ever greater extent in economic construction and planning. The territorial cross section of our current and long-term plans is of no less importance than the branch cross section. Territorial compexes are increasingly being considered as economic units. The problem arises of achieving a model organization of economic turnover not only for the country as a whole but also for separate area and territorial complexes.

The development of this principle affects the organization not only of planning but also of economic administration. Under no circumstances should such area economic complexes be built and considered as closed economies. Therefore the problem of rationalizing inter-area production ties assumes increasing importance.

As our national economy develops and improves, the inter-republic and inter-area ties expand rapidly. The construction of such gigantic power centers as the Kuibyshev, Stalingrad, Bratsk, Krasnoyarsk, Nurek and Nazarovo electric power stations has inter-regional and even inter-territorial importance. The tapping of large gas deposits such as the Romashkino, Stavropol, Starobeshevo and Gazly, and new iron ore deposits like the Kursk Magnetic Anomaly, the Kustanai (specifically Sokolovsk-Sarbaisk), etc., have analogous significance. Separate parts of the Bukhara area, a unit insofar as natural conditions are concerned, are located in the Uzbek, Tajik and Kirghiz Union Republics. Maximum economic development of this area is impossible without a single inter-republic long-term plan. Larger economic-geographic areas like the Transcaucasus (Azerbaijan, Georgia and Armenia) and the Baltic (Lithuania, Latvia and Estonia) are units in the natural and economic senses. The Central Asian republics (the Uzbek, Tajik, Turkmen and Kirghiz Republics) also form a single economic unit.

A unit of natural resources, specifically the water, plant and power resources, forms the basis of the Central Asian economic complex. In irrigated farming it is impossible to do without the joint, mutually agreed upon utilization of the water resources of the Amu-Darya and Syr-Darya basins. The water resources are the basis of the wealth and prosperity of this economic-geographic area.

As a result of the achievements of geology and the technical sciences, vast new power resources have been discovered recently in the above-mentioned economic area: gas deposits in Uzbekistan and Turkmenia and large power resources of the mountain rivers in Tajikstan and Kirghizia. This changes substantially the prospects for the economic development, economic profile and specialization of this area. Whereas in the past the Central Asian economic area specialized in the production of cotton, karakul, fruit and grapes, due to the use of new power resources it will soon become (while remaining, as previously, the main center for cotton production) a great power center along with a nationally very important base of power consuming and che ical industries. Reserves of hydrocarbon raw m terial and various kinds of salts (for instance, Kara-Bogaz) and polymetals, combined with ric power resources, create the prerequisites for t establishment here of new large industrial ente prises. The existence of large manpower resources in combination with favorable climatic ditions opens up prospects for the further devel ment of labor-consuming industries. This land ancient settlement and high civilization in the di tant past is receiving now, under the socialist system, exceptionally favorable opportunities f rapid industrial and agricultural development. Moreover a great power base will be set up her for neighboring economic areas (for instance, t Urals). The Central Asian economic area is an excellent example of socialist industrial and po development, of an old inhabited area whose ec nomic and, in particular, technical level was ve low in pre-revolutionary times.

Another example of the raising of an old inhab area to a new technical level is the central bla soil regions (Kursk, Belgorod and Lipetsk). Th tapping of the very rich iron ore deposits of the Kursk Magnetic Anomaly, which had been impos ble under the old technical conditions, is now re viving an area which, before the revolution, had been called "the poverty-stricken center of Rus

The new socialist social system and modern scientific and technological processes are work miracles before our very eyes, transforming th Volga Basin, for instance, from a very poor are as far as power is concerned into a land from which come mighty flows of power. This trans mation is taking place on the basis of the utiliz tion of new gas deposits discovered in the area between the Volga and the Urals, the constructi of mighty gas lines and the utilization of the Vo power resources through the building of very la modern hydroelectric stations and the erection lines of high-voltage transmission over long di tances (to the Moscow industrial area, the Ural and the Donets Basin).

The development of sparsely settled areas is no less importance. Of exceptionally great inte in this respect is the Angara-Yeniseysk area o eastern Siberia, where the greatest power resources of the Soviet Union are concentrated in form of the water flows of the Angara and Yeni and the huge coal reserves of the Kansk-Achin Cheremkhovo, Minusinsk, Tuva and the colossa Tungus deposits. This economic area, located tween the rivers Angara and Kamennaya Tungu the Yenisey and Ob, as well as Lake Baikal an the Sayans, possesses the highest power

ential in the USSR.
evelopment of the power resources of the above-
ntioned territory is very effective economically,
the mining of power coals and the production of
er power in this area entails the lowest produc-
costs and capital investments per unit of output
he USSR. The Bratsk and Krasnoyarsk hydro-
ctric stations, which will be the world's biggest,
Nazarovo Hydroelectric Station, the Sayansky,
garsk-Ilim and the Nizhne-Angarsk hydroelectric
tions, marked for construction in the near future,
well as the Bogotolovsk and other thermal elec-
stations will ensure a huge flow of electric
ver which will be quite sufficient for the develop-
nt of large power consuming (aluminium, magne-
m and titanium) and chemical industries (the
er based on the Irkutsk salt basin and the forest
lth of eastern Siberia) in this area. Moreover its
power potential ensures the transmission of
ctric current from there to the far Urals. This
ritory also possesses huge mineral raw material
ources (the Nizhne-Angarsk and Angarsk-Ilim
ore deposits, the Achinsk nephelines, the first-
ss Razdolinsk magnesites, very large polymetal-
deposits, Tuva asbestos and graphite). The An-
a area of the Yenisei Mountain Range, the
ntainous area of the new Abakan-Tayshet rail-
line, and the Krasnoyarsk and Tuva slopes of
Sayan are especially rich in mineral raw mate-
ls. There are large agricultural resources in the
usinsk lowlands and the Tuva Valley, which is
losed by mountains. This concentration of natur-
nd power resources provides a solid basis for a
hty industrial growth of this part of eastern
eria in the very near future.
he far east also possesses tremendous possibili-
for economic development. Considerable min-
raw materials and fuel and power resources
e already been discovered here. However their
fitable exploitation (with the exception of gold,
d, tin and fish) can hardly be earmarked for
ving the European and Central Asian parts of the
iet Union, since there are a large number of
logous and even richer natural resources to the
t. In view of this, the iron ore reserves of the
ns-Baikal and the far east (Aldan, Argun and the
ur-Zeya iron ore basins of the Sivagli type,
ezovskoe and Gar), the coking coal of Chulman
Niurengra, the forest resources of the Amur,
eya and Zeya, Sakhalin oil, and Vilyuisk gas can
economically used to the maximum only if the
elopment of the Trans-Baikal far eastern econ-
is oriented towards export. Thus the Soviet
on's economic outpost in the far west is emerging
eneral perspective (beyond 1965) as a very large
iet export and import base which will strengthen
and develop our trade relations with many countries of the Pacific Basin (in particular with the People's Republic of China, the Korean People's Democratic Republic, Indonesia, and other countries).

In the process of the economic development of the far east mighty power units will be set up on the Zeya River (the Zeya Hydroelectric Power Station), the Amur (Sukhotino, Blagoveshchensk, Amazar and Khingan hydroelectric stations), on the Bureya River and the tributaries of the Ussuri, as well as at the Raichikhinsk, Bureya, Bikin, Primorie, Sakhalin and Kamchatka coal deposits. A new metallurgical base of national importance will be set up east of Lake Baikal. Broad prospects are opening up for the utilization of the Kamchatka aquathermal springs of volcanic heat. In the long run Sakhalin and Kamchatka will unquestionably be transformed into economically developed and profitable industrial areas. They possess the necessary natural resources for this. Vladivostok, Magadan, Petropavlovsk-on-Kamchatka, Nakhodka and Sovetskaya Gavan' will become large, modern cities of world importance. Moreover a number of new seaports will be built on Kamchatka, Sahkalin and the Okhotsk and Pacific coasts.

Great problems arise in the process of the economic development of the Soviet north and the arid zones of our country.

Vast natural riches are located in the northern areas of the USSR: the Murmansk apatites, Ukhta gas and oil, Vorkuta coking coal, Norilsk polymetals, Yakutsk diamonds, Vilyuisk gas, Yakutsk, Magadan and Chukotsk gold and polymetal deposits. This wealth cannot lie untapped; it must be used to help in the building of communism.

Modern technology makes it possible to create fully normal living and working conditions even under very difficult natural conditions. The north, however, will be developed in the future also by settling only those spots where the more valuable natural resources are concentrated. In the more distant future a number of measures will undoubtedly have to be taken to transform the nature of the northern areas on the basis of future technology. This could be realized, for instance, by erecting a gigantic electric power station on the Bering Straits and controlling the exchange of warm and cold waters between the Arctic Ocean and the Pacific and Atlantic oceans.

The necessity will arise at an earlier period of transforming the nature of our vast desert lands. This undertaking will depend first of all on changing the course of the northern rivers to the south, as well as on the utilization of huge underground fresh-water basins discovered in many parts of our desert zone. Actually such measures are already being taken. In particular, the Irtysh-Nura Canal, now under construction in the Karaganda area, is the first attempt to divert Siberian rivers to the desert lands of Kazakhstan. Another grand project, the partial diversion of the Pechora and Vychegda rivers into the basins of the Kama and Volga rivers, is next in line. This undertaking, envisaged in the general long-term plan, will make it possible to increase the capacity of the cascade of hydroelectric stations on the Volga to that of the Kuibyshev Hydroelectric Power Station. The shifting of the waters will enable us to irrigate fully the land between the Lower Volga and the Ural rivers, as well as to change the level of the Caspian Sea to improve navigation and help develop the fishing industry.

In developing the plant wealth of the desert zone for the pasture needs of animal husbandry, modern technology makes it possible to change radically the life of the herdsmen by building comfortable houses and mobile living quarters, and also to change the conditions of the industrial processing of animal raw materials (mobile slaughterhouses and canning plants). The rational use of solar and wind energy on new technical principles can play a tremendous role in the development of the desert zones. A correctly organized exploitation of the plant resources of our desert lands will unquestionably enable us to increase substantially the output of livestock products (mutton, beef and wool).

The examples cited above clearly testify to the fact that an area economy can be defined as a specialized territorial economic complex, ensuring the maximal economically effective use of local natural and manpower resources in order to satisfy local needs more fully, and also to increase each area's contribution to the national economy through its own resources.

Thus the rational territorial organization of the economy, the expedient territorial division of labor and distribution of the productive forces are inseparably connected with the particular level of development of the natural and manpower resources of the given area and the country as a whole.

The development of the productive forces is also directly connected with the rational use of the natural and manpower resources.

The natural wealth is distributed territorially very unevenly. Thus 70% of the potential power resources of the USSR are located in eastern Siberia. Even if we ignore the reserves of coal deposits in the far north (the Tamyr, Tungus and Lena coal fields), which in accordance with the general long-term plan (to 1980) will hardly be tapped at all, eastern Siberia possesses the main stock of our power resources. Large oil reserves are concentrated in the Ural-Volga area, while one-third of the natural gas reserves are concentrated in Central Asia. A great iron ore belt stretches in latitude from Krivoi Rog and the Kursk Magnetic Anomal through the South Urals and Kustanai to the Gornoshorsk, Nizhne-Angara and Angara-Ilim depos winding up beyond the Baikal in the large Aldan a Amur-Argun concentration of iron ore. However even in this belt the iron ore wealth is concentra only in certain places. Copper, lead, tin, aluminum-bearing ores, etc., are also concentrated in separate areas.

The meridianal oil and gas belt, which penetrates far into the south, the Aral-Caspian area, and is located mostly on the slopes of the Wester Urals, is of an analogous character. At the pres ent time geologists are beginning to find gas deposits (Berezovskoe) and Oil (Konda River) also the eastern slopes of the Urals. A new gas and c belt is gradually becoming delineated also in the northeast of the Asian part of the USSR (north of Sakhalin and Kamchatka).

The forest wealth is mainly concentrated in Siberia and in the northeast of the European part o the USSR.

The best land for growing cotton is located in t Central Asian republics. The most favorable lar zone for beet production is located chiefly in the Ukraine and the central black-soil belt. The bes soil for wheat production stretches from the Car pathians to Lake Baikal, at first in a wide belt which narrows as it goes further east.

The places of concentration of the various natu al resources do not coincide as a rule. This cir cumstance is the basis for the specialization of individual economic areas on those lines of prod tion for whose development the given areas have most favorable natural and economic conditions. The Kuban has rich lands for the production of wheat and maize, while the non-black soil center and Byelorussia have the soil for the production potatoes and flax. This determines their agricul tural specialization. Tremendous power resour and rich nepheline deposits in the Angara-Yenis area determine its specialization in power-consuming industries, etc.

Manpower resources are also unevenly distributed territorially. For instance the areas of concentration of the population and power resources in the USSR far from coincide, which sp cifically leads to a sharp shortage of power resources in the central part of the USSR and in th Urals. Technological progress (the transformat of electric power to distant places, the construc of oil and gas lines, etc.) makes it possible to r duce substantially the shortage of power resourc in some economic areas. The future atomic pov nts will play a still bigger role in this respect. other way to eliminate the discrepancy in the disbution of natural and manpower resources conts in the intensive (though to some extent forced) ploitation of especially well located natural reirces in certain areas. Thus only 8% of the nanal geological coal reserves are in the south of European part of the USSR. About 40% of all the al now being mined in the Soviet Union is obtained re, while its consumption amounts to about 30%.

Iowever the chief means of eliminating the disepancy in the distribution of resources and producn consists in bringing production closer to the eas where the corresponding resources are conntrated (for instance, power-consuming industry ould be developed in places where the power reirces are most concentrated). This inevitably o involves the migration of population, of course.

The economic and technological characteristics power consumption, material consumption, transrtability and the labor consumption of various instries are of great importance in the solution of oblems concerning the rational distribution of oduction.

Production that consumes substantial electric wer gravitates toward electric power resources. ch are the electrochemical and electrolytic induses (aluminum, titanium, magnesium, nickel, zinc l copper), as well as the ferroalloy and artificial er industries. However technological progress es somewhat more freedom here in selecting a ce for production due to the development of united wer systems.

The mining and material-consuming branches of oduction, as a rule, gravitate toward raw material sources. The ferrous metal industry, which connes a great deal of material in creating a tremenis flow of iron ore, coking coal and flux, usually avitates toward either iron ore or coking coal reirces, and in separate cases also to places where condary material — scrap iron — is concentrated erepovets). But with the development of techogy such a situation can be changed substantially. particular, in introducing the blasting of natural s in blast furnace production, the expenditure of e per ton of pig iron drops sharply while the ore oportion of the mixture increases, which causes rous metal plants to incline towards greater ximity to iron ore resources. The mastery of technology of the production of alumina from the helines (but not bauxites) makes it possible to ganize in eastern Siberia not only the production metallic aluminum, which requires a great amount electric power, but also the production of alumina, ich is a semi-product in aluminum production.

e development of the oil- and gas-line network makes it possible to disperse the oil refining and chemical plants producing synthetic substances out of carbon dioxide raw material and to bring them closer to places of consumption.

Industries whose products are non-transportable or only slightly transportable (furniture, confectionery, beer, brick, glass, cement, etc.) are drawn to the places where these products are consumed. As a result such industries are set up, as a rule, in places of population concentration.

The need for ensuring full employment for the population leads to a situation where labor-consuming industries which consume little power and material (metals, for instance) are usually drawn to populated centers. In the distribution of social material production, securing the full employment of all the manpower resources of the family is of substantial importance. For instance in the mining and metallurgical centers, where male labor is chiefly required, enterprises should be built to utilize the labor of women; and in textile industry areas, where women's labor predominates, industries based on the use of male labor should be set up. It is expedient to develop industry processing agricultural raw materials in agricultural areas with seasonal labor. In distributing cooperative production enterprises, the need of increasing the utilization of the manpower resources of the small towns and settlements where the share of the population occupied in social production is comparatively small should also be taken into account. This trend is especially noticeable in the distribution of the machine-building industry, where the production of the items, units and details to be assembled are placed in satellite towns, and in general in small neighboring towns and workers' settlements.

Thus the use of manpower resources is of first class importance in the distribution of social production. However, due to the development of sparsely settled areas with rich natural resources, population migration becomes necessary. Thus in prospect in the long run is the resettlement of about 6,000,000 able-bodied people to the east of the country. The inevitability of a population migration also results from the uneven increase in the population (due to the sex and age pattern). As a result, in some areas the increase of the population amounted to 40% in twenty years, and in others — to only 5%.

Consequently the problem of the rational distribution of productive forces consists in coordinating the distribution of natural wealth and manpower resources on a scientific and economically expedient basis, combining in an optimum way the centers of concentration of natural resources, population and consumption with the centers of production.

The problem of the distribution of production forces is a problem of the optimum distribution of the centers of production of various kinds of material values under a given distribution of the centers of concentration of natural resources, consumption and population. In this special significance is assumed by those centers which coincide with the centers of exchange of the population's economic activities, usually located at crossings and along transport routes (water, railroad, automobile, cart, as well as gas and oil pipelines, and electricity transmission lines).

The science dealing with the territorial organization of production and the territorial social division of labor is called upon to draw up scientifically substantiated criteria and methods for the selection of areas and points for new industrial and agricultural construction, as well as for the selection of existing enterprises for technical reconstruction and expansion. This should ensure determination of the optimum and more economical planning decisions on the distribution of production and capital investments, the specialization of economic areas and the perfection of inter-area and inter-branch production ties.

The selection of areas and points for the construction of new enterprises and the reconstruction of old ones should end in the creation at first of a set of hypotheses for the formation of new industrial and agricultural bases and power centers, and then in complex projects of area planning of plants and settlements.

In the solution of the problem of the development and distribution of production forces, the role of scientific institutions in the discovery and technical-economic assessment of natural resources (for instance, drawing up prognostic metallogenic charts) is especially great. Their role is no less important in analyzing the factors and conditions for a rise in labor productivity, the demographic and vocational advances in manpower resources, as well as in drawing up scientifically substantiated recommendations for the improvement and perfection of inter-branch and inter-area production ties.

The role of the scientific institutions and higher schools in elaborating the general theory of the development and distribution of the productive forces under the conditions of the transition from socialism to communism is an especially responsible one. Such a theory should contain a system of principles, economic criteria and precise quantitative methods for scientifically substantiated planning decisions with respect to the development and distribution of production forces and the territorial organization of social production. It should also include a territorial model of social production, characterizing the major territorial proportions of the national economy and the main planning indices for the volume and dynamics of social production for all of the economic areas. A specific example of the construction of territorial models is the inter-branch balance for the production and distribution of output of an economic administrative area, which takes into account simultaneously the areas that import semi-finished goods, fuel and raw materials and the areas that export.

However the inter-branch balance for the produ tion and distribution of output, being a model of th economic area, cannot as yet fulfill the function o a territorial model of production, since it does nc include the matrices of coefficients of providing production with manpower and natural resources. These coefficients (arranged in the form of a rectangular matrix) show how the various branche of production are provided with labor, mineral ra material, fuel and power, land, forest and water resources.

To ensure the uninterrupted work of every production unit, it must be provided to a definite degree with the corresponding resources. Thus metallurgical enterprises requires a certain amount of industrial reserves of iron ore, coking coal, flux, fireproof clay, etc. at the deposits attached to them. Not a single production unit ca be organized if its production process is not guar teed for a sufficiently long period of time the industrial reserves of raw material serving its deposits.

Our country spends huge means for geological exploration to maintain the necessary level of industrial reserves of mineral raw materials and fuel for operating plants and those under constru tion. Society is bearing large expenses also for the improvement, preservation and reproduction forests, irrigation and reclamation work, the development of new lands, river control, the buildir of water reservoirs, etc. Such national economic capital outlays ensure the reproduction of resources and their maintenance at the necessary level. This level of providing resources is reflected in the model in the form of coefficients characterizing the volume of the various kinds of resources calculated per unit of output of the corresponding branch of production.

The inclusion of the matrices of resources in t territorial model of production makes it possible compare the resources and the demand for them, and this is the main condition for drawing up a scheme for a rational territorial organization of production and social division of labor. Such a model of social production should ensure, on the basis of corresponding economic-mathematical

cessing, the solution of extreme problems in the
ection of optimum variants of the territorial dis-
ution of material social production.

he socialist theory of the development and dis-
ution of production forces contains the main
nciples and the most important economic criteria
ensuring a more economical distribution of pro-
tion centers, taking into account the location of
centers of concentration of natural resources
consumption.

trict observation of the main principle of ra-
al distribution, which requires the maximum
nomy of social labor at all stages of production
turnover, beginning with the initial raw material
ending with the delivery of the finished product
he consumer, is the basis for the correct dis-
ution of material social production. V. I. Lenin
essed that a scientifically substantiated distribu-
of production forces must ensure "the possibil-
of the least loss of labor in the transition from
processing of the raw material to all the subse-
nt stages of processing the semi-finished prod-
up to receiving the finished product."* Not a
gle variant for new industrial or agricultural con-
uction or for the expansion of an operating enter-
se can be adopted if it leads to the reduction of a
viously achieved level of social productivity of
or. The entire meaning of the demand to bring
duction closer to the raw material resources and
ters of consumption, just as the entire signifi-
ce of the struggle against excessively distant and
tional shipments, consists in fulfilling this de-
ve principle of the utmost economy of social
or.

o ensure, under the territorial organization of
ial production, the minimum total (from the raw
erial to the finished product) outlay of working
e per unit of the final social product, which forms
of the material composition of the national in-
e, is the main economic criterium for the ra-
al distribution of social production. The de-
d for minimum production and transport costs
the least capital investments per unit of in-
ased output is merely one of the forms of ex-
ssing the principle of the utmost ecnnomy of
ial labor.

n new construction and the distribution of capital
estments, the latter involving both the creation of
production units and the expansion and technical
onstruction of existing production units, prefer-
should be given to those points and areas
re a rise in the general level of social produc-
y of labor is ensured, and where, consequently,
investments can yield the biggest economic effect.

The securing of complex and full utilization of resources is the second basic principle for the rational distribution of production. The role of this principle is especially great with respect to the utilization of manpower resources. Leveling of the living standard and raising the cultural level of the population presuppose full employment in those branches of production which ensure them a sufficiently high income level. However in utilizing manpower and other resources this principle cannot and should not contradict the main principle — the utmost economy of social labor.

The problem of small towns and settlements, where the employment level of the population in social production is not high, assumes special importance in the distribution of new production and the expansion and reconstruction of existing plants in accordance with the principle of ensuring full utilization of manpower resources. The securing of full utilization of manpower resources must not, however, contradict the natural process of population migration. Observation of this principle does not at all presuppose the territorial national seclusion of the population. We know that Armenians, Kazakhs, Georgians, Ukrainians, Tatars, Letts and people of other nationalities are successfully working in various areas of our boundless motherland.

Maximum utilization of manpower resources is impossible without the complete development of the richer and economically more effective local natural resources. The primary thing here is to secure complex utilization of the natural resources. It is impermissible, for example, when polymetallic ores are used only partially and very important components go to waste. It is impermissible when accompanying gases of oil wells are not caught, when gas torches burn at oil and gas deposits or when a considerable mass of timber remains at timber clearings in the form of stumps, branches and other waste which could be processed with the organization of timber-chemical enterprises.

We must increase sharply the economic efficiency of the development of natural resources by the combined utilization of natural raw materials. Such indices as, for instance, the production of valuable products — paper, cardboard, plywood, etc. — out of one cubic meter of cut timber assume special importance. The complete industrial utilization of secondary raw materials — scrap iron, waste, paper, mackle, garbage — plays no less a role.

All these things are specific expressions of the requirements of the second principle for the rational distribution of production forces: the complete, complex utilization of natural and manpower resources under the territorial organization of

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. I. Lenin, *Soch.*, Vol. 27, p. 288.

social production, especially with the coordination and cooperation of diverse production units.

The third principle of the rational distribution of productive forces was formulated in a resolution of the 21st Party Congress: "In each republic it is planned to develop first of all those branches of the economy for which the most favorable natural and economic conditions exist, in order to utilize more effectively the resources of each republic and to secure a correct combination of the interests of the individual republics and those of the Soviet Union as a whole."

In attracting new sources of raw materials and power into the economic turnover, the principle of their consistent development through the priority attraction of those sources of rawm aterial and power whose utilization involves the smallest outlays of labor, the lowest production costs and the smallest capital investments per unit of output should be observed. However in individual cases some deviation from this principle is permitted in order to save time.

In solving the problems of the priority and preferential development of one or another production unit in each given economic area, of paramount importance is that territorial organization of social production which ensures the greatest contribution of each economic area to the national economy as a whole and the greatest economic effect with the maximum utilization of local natural and manpower resources.

The main task of economics is to raise the formulation of the principles of rational distribution to such a degree of concreteness and quantitative definiteness as will ensure comparison of the variants of the distribution of productive forces on the basis of fully definite economic criteria. These economic criteria must form the basis of the territorial model of social production, whose most important territorial proportions would characterize the specialization and complex development of economic areas and their inter-area and inter-branch production ties.

The conception of the complex development of an economic area, however, must be made more precise. Not every set of various kinds of products forms a production complex. The striving for an internally closed economy is the reflection of an incorrect, parochial view of a complex economy. The basis and the core of every production complex is made up of the characteristic and specialized branches that determine the place of the given economic territorial complex in the national division of labor.

The specialization of an economic area is characterized, on the one hand, by its inter-area production ties, i.e. in the main by those product of labor which the area exports beyond its borde and on the other — by the items it imports into i territory. The composition of the imported item shows to what extent one or another specializati of the economic area is based on the utilization its own resources. All this does not mean, of course, that the data on the composition of the c modities brought from outside the concrete terri torial complex is fully sufficient for a thorough characterization of its specialization. However composition of inter-area and intra-area comm ity production is of paramount significance in es lishing the specialization of the production comp on any scale.

In determining a production complex one can not limit oneself to the characteristic and speci ized branches of the economy. All kinds of auxi iary and subsidiary branches using local resour for local needs play an important role. All of th auxiliary and subsidiary branches must be organized at that scale and level which will fully ens the satisfaction of the needs of the population an the specialized, characteristic production branc of the entire economic area on the basis of local resources.

The economic expediency of various scales of velopment of subsidiary branches for satisfying local needs on the basis of their own resources entirely determined by the principles of the rati distribution of productive forces indicated above The time has come to draw up in every economi area a special summary plan for the developme local services and auxiliary branches in order satisfy local needs more fully. Such a plan shou be directed towards the utmost and complete sa faction of both the needs of the population and th needs of specialized branches producing for the country as a whole. The corresponding project the organization of housing construction, local munal economy, repair work, public catering, enterprises and institutions providing public se vices, etc. has special importance in this summ plan.

In the period of transition from socialism to communism the problem of leveling out the eco ic development of various areas of the country of individual countries inevitably arises.

The principle of leveling out the economic development of separate territorial subdivisions questionably includes raising the standard of li and the culture of the population to the same le throughout the entire territory. This is require the realization of the communist principle of liquidating the essential differences between to and country and between mental and physical la

task of raising lagging areas to the level of the
ınced ones is to be solved in the same direction.
principle of economic leveling is incompatible
the one-sided specialization of some areas as
ly industrialized, others as raw-material ap-
lages to the first, and still others as agrarian
plexes. Simultaneously with the growth of in-
ry in our country, science develops, the arts
rove, and the differences in the standard of life
cultural development of the population of sepa-
areas are being eradicated.
ealization of this principle will not mean, how-
, that in the near future all differences be-
n the areas in the social productive power of
r can be eliminated and that the same level of
capita production of national income can be
ıred everywhere. In the more distant future,
the correspondent development of science and
nology and the rational territorial distribution
ocial production, such a leveling of economic de-
pment will evidently also be achieved. But first
ll the material and the cultural life of the entire
ılation must be raised to the same level. This
be achieved first of all by the expedient terri-
al redistribution of the surplus product. Only on
basis can the main differences between the dif-
nt economic areas and settlements be fully
idated.

A leveling of economic development is unattainable under the capitalist economic system, where individual territories and cities which dominate the others redistribute surplus value in their own favor (i.e. in favor of the rich), extorting it from the territories subordinated to them and thereby intensifying the differences in the standard of life and the cultural level not only of separate territories but also of separate countries. Given the existence of antagonisms between areas under capitalism, the principles of the rational distribution of production are often violated and the result is that many areas are transformed into raw material and colonial appendages of the highly industrialized metropolises in order to extract surplus value from them.

Such area antagonism does not exist under socialism, since the local manpower and natural resources are fully used in accordance with the possibilities for their economically effective development on the basis of the socialist principle of leveling the general standard of life and raising the cultural level of the population in all areas of the country. In this every economic area evolves as a many-sided territorial production complex having its own special economic profile, its specific development and its own peculiar structure.

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Price and Value Theory

Planovoe Khoziaistvo, 1961, No. 7

Pervushin

LAW OF VALUE AND PRICES IN A SOCIALIST ECONOMY

vigorous discussion of the principles of price
ıation has been going on in our country and the
r socialist countries for many years. The
ıtened interest of scientists and practical work-
in this problem is quite understandable and
justified, for basic socio-economic and organizational problems are involved in price policy. Economically substantiated prices are essential for the organization of planning, for determining the effectiveness of economic measures, for consistent

implementation of the principle of material incentive and for the establishment of proper relations between town and country.

Everyone now recognizes that the practice of price formation which has developed requires considerable improvement. The existing practice of price formation results in prices failing to reflect the real changes in outlays of socially necessary labor, and therefore hampers the introduction of cost accounting and does not induce economic administrators to make effective use of fixed and working capital. Because of faulty prices the principle of material incentive cannot be consistently implemented in a number of cases. The present practice of price formation hampers the elaboration of long-range plans. Insofar as outlays of social labor are very inexactly reflected in prices it is difficult to express the rate and proportions of development of the different branches of industry in value indices, to determine the advantages of new techniques, the economic indices of particular measures of economic organization.

Of late, in connection with the instructions given by the July 1960 Plenum of the Party Central Committee to planning and finance bodies to submit recommendations for improving the price system, the theoretical and practical elaboration of this problem has been stepped up. However, up to now, generally accepted ways and means of improving prices have not been worked out, and many sharply differing viewpoints are current. A difference in points of view is, of course, not objectionable in itself. But to obtain positive results it is necessary to adhere to certain methodological premises without which solution of this problem is inconceivable.

The first thing which must be done is to make a thorough study of the experience accumulated in price formation and to utilize everything useful in price policy achieved during the years of building socialism in our country and in the other socialist countries. In this light the suggestion of some economists that we construct a price system from "scratch," on a fundamentally different basis, rejecting everything positive accumulated in the practice of price formation over many years, appears unsound.

A second and no less important condition for a successful elaboration of recommendations for perfecting the practice of price formation is to recognize the value nature of prices and on that basis to study the forms in which the law of value manifests itself in the concrete conditions of economic development.

Unfortunately a satisfactory solution has not yet been found for the problem of using the law of value and value categories in socialist economics. Some economists and philosophers have not yet overco the metaphysical approach in their interpretatio the law of value and value categories. In view of this the law of value and value categories are eit denied or their existence is recognized but the necessary inferences cnncerning their changed s cial and economic nature are not drawn. Yet the chief function of research is not to argue about whether the law of value does or does not exist, since experience has long since and convincingly shown that the law of value and value categories exist, but to study the specific forms in which th law of value appears in the different stages of bu ing socialism.

This truth seems self-evident. Yet controvers over whether commodity production and value ca gories have a place under socialism, which occur in past decades, has recently broken out with fre force as a result, in particular, of the publicatio of the works of I. Malyshev and V. Sobol. (1) Moreover the advocates of the different points o view are apparently convinced that they are argu about whether the law of value and categories of commodity production operate under socialsim, when actually the dispute is over the concrete fo in which the law of value appears in the present stage of building communism.

What is most curious is that economists who verbally recognize the law of value in practice p pose that prices be fixed on the basis of product costs (that is, without taking into account the ful outlays expressed in value terms), while those w verbally reject the law of value propose to use a basis for price formation the price of productio which is unthinkable without the law of value.

A typical representative of the former viewpo Comrade Maizenberg, verbally recognizes the c modity-value nature of prices under socialism, in practical work on price formation he propaga a principle according to which the price is made up of production costs and a small addition to it (the size of which is not based on any objective teria and, as a rule, is considerably less than th size of the surplus product). As a result the bu of commodities go to consumers at prices considerably below their value, and a very limited group of commodities are sold at prices severa times above their value.

Prices set on such principles achieve the red tribution of the surplus product and centralizati of the net income fairly well, but they do not encourage a more efficient organization of produc of material values, they do not create a sound e nomic basis for economic relations between ent prises, and they do not stimulate personnel to v for higher profitability of their enterprise.

Iowever the chief shortcoming of the existing
nciple of price formation is that it does not en-
re against errors of a subjective nature, since in
ting prices for concrete commodities it is impos-
le to make price changes conform more or less
ictly to objective tendencies in the changes in
ue. In other words, formal recognition of the law
value is not reinforced by practical methods
ich permit taking into account the changes in value
price formation.

n contrast to this, Comrade Sobol asserts in full
eement with Comrade Malyshev and certain other
nomists that "there is no place for the law of
ue in a planned socialist economy." (2) Yet these
hors recommend that prices be set on the basis
production, and hence actually speak in favor of
ognition of the law of value under socialism.
Naturally, since they cannot get along without
ue relations in their constructive work, they dif-
ently recognize the law of value while trying to
d supplementary definitions such as "socialist
ue."

n order not to introduce new terms, Comrade
ol says, let us agree to call outlays of social la-
 in the production of the social product in a so-
list society the value of the socialist social
duct. And then he repeatedly specifies that value
a socialist economy differs from value in capi-
ist commodity production.

Comrade Sobol's error, as that of those holding a
nilar view, is that they take the evolution of and
ange in the social-economic nature of the laws of
nmodity production as a complete denial of their
sence. It is like breaking into a house when the
or is open to try to prove the long-established
th that value and value categories under social-
n fundamentally differ with respect to their social
sence and the form in which they appear from
nilar categories under capitalism.

The chief point, however, is that no matter how
ch the authors wish to do without the law of value
working out the principles of price formation,
y cannot do this without forsaking reality. This
t is further proof of the need to take strict ac-
nt of the law of value in setting prices.

But to take the law of value into account under
ialism does not mean to follow blindly the dynam-
 of value outlays. Socialist society can oppose
 objective tendencies in the changes in value with
 organized will, a considered system of meas-
es, and thus use price policy to obtain economic
sults planned in advance. Comrade Kronrod's
wpoint does not meet these conditions at all when
asserts that under socialism the law of value
overns the process of planned price formation."
he fact," he says, "that price is an expression of

value and that changes in prices are determined or regulated by changes in value signifies that in the conditions of socialist commodity production, as in the conditions of commodity production in general, the law of value is also the law of prices, that is, the law regulating prices" (our emphasis, S. P.). (3) He says quite definitely and unambiguously that under socialism the law of value governs the process of price formation, regulates prices. And however many reservations are made after this to the effect that the law of value "governs" these processes differently than under capitalism, the role played by the law of value has been exaggerated. Such exaggeration contradicts the social-economic nature of our society, where people shape their own destinies to an ever greater extent, and organize and direct social production in accordance with aims set in advance.

Anyone even slightly familiar with socialist practice in running the economy well knows that in a socialist society it is not the law of value which "governs" prices, but government bodies, which do so in accordance with the price policy adopted by the state, a policy worked out on the basis of analyzing the objective economic processes and the concrete tasks in building communism. In a number of cases prices are set to achieve a revolutionary shift of the economic structure of production despite objective tendencies in the movement of value. For instance, in order to achieve the most rapid industrialization of the national economy, prices served for a considerable time, and continue to serve even now, as a means of redistributing accumulations in favor of those branches which must be developed at a rapid rate, despite their losses in the initial period of development.

We may argue about whether particular deviations of prices from value were always justified, but it cannot be denied that for more than 40 years now prices have been regulated by government bodies in line with the policy worked out by the Party for a certain period. The problem therefore is not who governs the process of planned price formation but how to make sure that the best methods of setting prices are worked out, that the objective factors which make it necessary to change prices in the different stages of building communism are taken more fully into account.

For this there is no need to re-examine the fundamental question of the relationship between the objective and subjective in a socialist society. From the time the proletariat took power into its own hands the possibilities for more fully subordinating economic policy to the conscious and purposeful movement of society toward communism have been growing in the measure that socialization of production has been expanding. And while individual problems of economic policy have not always been solved successfully, this is due largely to the imperfection of concrete methods of scientific analysis of the objective conditions of economic development. This applies in particular to the conditions and the forms in which the law of value and value categories appear. It follows from this that in setting prices the socialist state and its economic agencies cannot take the position of non-interference in the shifts of value categories. On the contrary, interference must be the more vigorous and skillful the higher the forms of social organization of production. This is one of the major methodological conditions for working out the principles of price formation. Moreover there should not be two opinions about the fact that even the most perfect methods of price formation cannot automatically predetermine particular changes in prices. Their role comes down to serving the planning agencies as a reliable instrument in planned price formation. We must recall this trivial truth because often in the controversy on the principles of price formation some economists seriously express the fear that the establishment of a single scientifically substantiated principle for price formation will deprive planning bodies of the possibility of introducing particular changes in prices in conformity with the requirements of economic development.

The main and decisive condition for a scientifically substantiated principle of price formation is the setting of prices for the entire national economy on a uniform value base. The experience of past years has convinced us that a long and economically unjustified divergence of prices from value leads to undesirable economic consequences, making it necessary in the final analysis to revise prices so as to approximate them to the socially necessary outlays of labor. Today many now agree with this, but correct practical conclusions are not always drawn from this fact. Some economists recommend that prices be set on the basis of branch value. Their method of price formation is persuasively simple. It is necessary in their view to add to the wage fund a certain predetermined magnitude of the surplus product which, together with the value of the actually consumed means of production, will constitute the price of the given product. The theoretical grounds for this are reduced to a very simple formula: insofar as the product turned out by the particular branch is necessary, the outlay of living labor, however great, is from the standpoint of society necessary and expedient, and society should recognize it. In other words, the larger the wage fund the greater the value created in the given branch and the higher should be the price, irrespective of whether the outlays made correspond to the average socially necessary conditions of production.

Let us put aside for the time being the theoretical aspect of the question and see what the practi results of this method of price formation will be. Let us assume that two branches (or two enterprises) employing the same number of workers have produced a material product of equal value. If in one of them, due to the mechanization of labo the number of workers and, correspondingly, the wage fund have been cut in half, then, all other co ditions being equal, the sum of prices in this bran will be cut by the sum of the reduced wage fund a the corresponding amount of surplus product. In other words, under the influence of mechanizatio the economic indices of the work of the enterpris or the whole branch will worsen considerably, an a branch which has little mechanization and employs a large number of workers will prove to be a privileged position. This system of price formation would not create an incentive for technical progress and would encourage and consolidate outdated methods of organizing production.

It can be definitely stated that introduction of th principle of price formation in economic practice would be a step backward in comparison with the one now applied.

Theoretically too this method is totally unfound It is based not on the law of value but on the law labor outlays. Since the authors intend to limit th operation of the law of value to individual branche they are actually denying its operation.

The method's unsoundness also reveals itself i the fact that it regards branch value as a self-contained factor unaffected by the average nationa economic conditions of production. Actually the general level of development of the productive forces has decisive influence on the level of valu in the branch.

And since in a socialist society, in contrast to capitalist society, the law of equalization of the levels of economic development operates within i dividual branches, between branches and between socialist countries, this influence manifests itsel to an even greater degree. A socialist society ha the possibility of exercising planned influence on the level of outlays of labor by introducing new machinery and technology and raising the skills the workers. Of course in concrete historical co ditions society is forced to set prices of product of individual branches on the basis of branch outlays of labor, and in a number of cases to deliber ly maintain a higher level of prices in order to ensure accumulations and accelerated developme of the given branch. But there are no valid grou for raising this system to the level of a general l

Ve know that the entry of our country into the
riod of the comprehensive building of communism
marked by a broadening rather than a curtailing
the sphere of operation of value categories within
country and in the relations between countries.
is regular process of expansion of the sphere of
eration and the use of value categories in eco-
mic practice is accompanied by the creation of
nditions for a shift to direct calculation and distri-
ion of products. Moreover the objective process
equalization of the levels of economic develop-
nt of the different branches of material production
eates the conditions under which the level of so-
lly necessary outlays of labor, the magnitude of
value of the social product and the indirect ex-
ession of value in planned prices will steadily con-
ge in their absolute magnitude.

Vith the steady rise in the degree of socialization
labor as a result of its greater division and co-
eration, the yield of the labor of each individual
rker will become a function of the entire social
ganism. No one will then be entitled to assert that
efforts alone created a particular quantity of the
cial product, or of the surplus product.

There is even less reason for regarding each
nch of material production as a self-contained
nomic unit and to attribute a particular economic
ect only to it. Even today the economic indices of
branches of material production are determined
gely by the level of electrification and mechaniza-
n of labor, and as electric power spreads to all
cesses of material production this influence will
come still greater. In turn, the economic indices
electric power output depend on the level of ma-
ne-building, the ways and methods of erecting
ctric power stations and other conditions.

The interconnection and interdependence of dif-
ent spheres of material production are always
nifested in one or another degree. However it is
y large-scale machine production and the intro-
tion of electrification that give this process a
litatively new content under which the origin of
vly created value in general and surplus product
particular would appear to be impersonal. The
plus product emerges as a result of the aggre-
e effort of workers in the different branches of
national economy linked together in a single
nomic organism.

Under these conditions fewer possibilities remain
determining anywhere near exactly the individual
branch value of the product. The size of the ag-
gate product and of the newly-created value can
more or less exactly determined and compre-
ded on a national economic scale, and in these
ditions the surplus product of each branch of in-
try can be properly regarded as a magnitude expressing the result of labor outlays under average socially necessary conditions of production.

This objective law began to manifest itself quite definitely under the conditions of developed capitalism. Such economic categories as the general (average) rate of profit and the price of production arose not because of the subjective wishes of the capitalists but as the inevitable result of the development of the productive forces and, at the same time, as a necessary condition for successful development of large-scale machine production based on the division of labor.

Such laws governing the development of the productive forces cannot be ignored in a socialist society. It must be remembered that under capitalism such a law could not manifest itself fully, since the limits of private property and the striving for maximum profits hamper the manifestation of these processes and make for a sharp unevenness in the development of branches. In a socialist society the social causes making for this unevenness are removed, and the objective conditions are created and organizational measures are taken to lift up the lagging branches. The system of price formation should encourage this considerably.

It is clear that prices based on branch value can only consolidate the difference in the levels of labor outlays and not encourage their leveling, that is, operate against the general trend of social development.

On the contrary, prices set on the basis of the average socially necessary outlays of labor in value terms could help to equalize the levels of the socially necessary outlays, in other words, operate in the direction of the general laws of development of the productive forces during the transition from socialism to communism.

We often hear arguments that prices set on a uniform value level will hamper the development of backward branches and place the more developed branches in a preferred position. This argument would be justified if the price mechanism played a decisive role in the redistribution of the surplus product. In a socialist economy the rates and proportions of development of the branches are determined by the plan and the financial outlays are regulated by the budget. Under these conditions the price mechanism cannot play a decisive role in the redistribution of the surplus product. The price plays only a subsidiary role in this process. The role of the price appears, in particular, in providing planning and financing bodies with an objective economic index of the state of development of a particular branch.

Should it be found that a branch cannot operate profitably under prices set on the basis of average value for the national economy this would mean that the branch requires organizational measures aimed at cutting labor outlays per unit of output.

Without a uniform price level there are, strictly speaking, no objective criteria for determining the economic results of the operations of branches and individual enterprises; all other methods of determining economic results suffer from subjectivism and therefore do not create identical conditions for the work of enterprises.

Probably the strongest argument in favor of setting prices on a single value basis is practice. The experience of the Soviet Union and of the other socialist countries indicates that in the initial stages of building socialism a considerable differentiation in prices was necessary. However as social-economic problems were solved and the economic backwardness inherited from the old system was eliminated, the tendency for the price levels to draw closer manifested itself more and more fully and distinctly. In the Hungarian People's Republic a wholesale-price reform was put into effect as soon as the socialist sector in industry had become completely dominant in order to create a uniform price base. Two years of experience in working under the new system of prices have demonstrated that the measure was a progressive one.

In the Soviet Union wholesale and retail prices have been revised step by step since 1949 so as to bring them closer to the general value base. In economic substantiations of projects the methods always used are to determine prices on the basis of a single value base and to ensure a like effect from equal investments. Finally, the existing method of centralizing the net product by means of the turnover tax is one of the ways of equalizing the levels of economic development of the different branches and is a supplementary mechanism for ensuring correspondence between the sum of prices and the sum of values. However it was not related directly to the economic conditions of work of each enterprise and not infrequently works against those who attempt to obtain better economic results by using their creative initiative.

As soon as the objective law of the inevitability of going over to a single price level has been discovered, concrete ways and methods of consciously utilizing this tendency are needed. The problem consists only in making changes in prices on the basis of a rigorously substantiated uniform principle, and not from case to case, empirically, in the form of eliminating intolerable discrepancies in the level of prices. The principle of price formation on the basis of branch value examined above cannot by its very nature meet the task set.

In recent years comrades Vaag, Malyshev, Sobol and others have been vigorously advocating a principle of price formation that outwardly looks like the price of production. It is hard to judge the merits or demerits of this proposal as it has bee inadequantly worked out on a theoretical or applie level and has not been confirmed in practice. Thi in part explains the fact that objections to this co ception have not gone beyond arguments of forma logic.

Many economists are prejudiced against this id for the reason that the "price of production" category was borrowed from capitalist practice. At o time the very same argument was used against price, money and other value categories in genera Subsequently life rejected such arguments and it was recognized that under socialism value, mone and commodity differ fundamentally with respect their social-economic nature from the analogous concepts under capitalism. Is this not the case with the proposed principle for price formation? Applied in conditions of socialism it will, of cours have nothing in common with the capitalist price o production. All that will remain between them is an external, formal resemblance.

It is also said that this idea is not new, that it was once put forward and was rejected. To this w may answer that this argument is not new either. We know, for instance, that the idea of the need tc recognize the obsolescence category in a socialis economy was advanced in the 'twenties but was rejected and condemned. At that time, when the country was short of even the simplest mechanis it would have been wrong to give up the use of obs lescent machines.

In the new conditions, when the dearth of machinery has been eliminated and the main policy i to introduce the most up-to-date machines and mechanisms, it has become state policy to aband obsolete machinery. In assessing the different principles of price formation we can not ignore t changes that have occurred in the economy. Tod after a giant stride has been taken in the development of all branches of the economy from backwa ness to progress, favorable conditions have been created for setting prices based on a principle which would put all branches of production in mo or less equal economic conditions and would sho more exactly the economic merits or demerits o the different methods of economic management.

Another group of objections amounts to this: that the application of the principle of price of pr duction in a socialist society contradicts the Marxist theory of labor value, since to recognize the category of price of production would mean th value is created not only by living labor but also past labor. But we know that Marx, who made a

rough study of the category of capitalist price of
duction, did not for a moment assume that value
created by capital. He merely showed that in the
ditions of developed capitalism the price of pro-
tion is the most common form of realizing the
plus product created by the workers, the form of
istributing the profit among the entire class of
italists.

t is clear that under socialism, where value is
ated by living labor and the surplus product is
d in the interests of society as a whole, the prin-
le of price formation can serve this process only
re or less successfully.

enial by many economists of the need to make
of the price-of-production principle, however
egorically it is made, does not help to clear up
question, for it is not supported by an analysis of
concrete pros and cons of this idea. What, for
mple, can we get out of the following assertion
de by Comrade Probst: "Application of the price
production in a socialist economy is not in accord
h its nature and contradicts the theoretical prin-
les of socialist economics." (4)

Vhat does Comrade Probst propose? He recom-
nds setting prices on the basis of value, but it is
clear how this is to be done practically. Let us
ume that computing techniques and the methods
calculating value will be perfected to such an ex-
t that it will be possible to determine the value of
products produced by branches and individual
erprises. Does this mean that it will be possible
set the price of each article according to its
ue? Of course, not. No method of price forma-
can reflect the constant changes in the value of
h individual commodity. Moreover the price
egory has objective bases for existence only so
g as it serves as an instrument for indirect cal-
ation of the social outlays of labor. When there
no longer any need for it, there will be no prob-
of price formation either. This, however, is a
tter of the future. Now we are concerned with
fecting the principles of price formation and in
situation to propose calculation of value instead
letermination of price is to move away from
ving the problem.

follows from what has been discussed that
oretical arguments alone can not decide whether
idea of "price of production" is suitable or not.
make a final judgment on this conception it must
examined from the practical standpoint; it is
essary to study the possible forms and limits of
application and check them in practice.

heoretical considerations and economic experi-
e therefore speak in favor of a principle of price
mation based on a single general level of value.
ler the existing system of price formation,
although measures have been taken to bring prices closer to a single value base, consistent application of the principle has not been achieved. Does this mean that we must almost immediately abolish the existing system of price formation and institute a new one? In such a vast and complex economic organism as is the national economy of the Soviet Union it would be impossible and harmful to the building of communism to introduce radical changes in the system of price formation until a new system has been worked out in every detail and tested. And perhaps, on the whole, the transition should be made gradually, as the conditions for it are prepared and have matured.

Of the known methods of price formation, only two, in our opinion are of practical interest — the existing method and the one recommended by the advocates of the price of production. The advantages of the former are that it has been tested in practice over many years and notwithstanding its shortcomings has assisted in the building of socialism and communism; but, as has been said before, it must be considerably improved. A more thorough examination has revealed a number of elements that are common to the existing mechanism of price formation and to the one recommended by the advocates of the price of production, despite the fact that they seem diametrically opposed. It is indicative that in the course of working out measures for improving economic work individual economic indices stemming from the price of production have been applied for several years. For example, the planning and calculation of production costs by the method of outlays per ruble of commodity output is none other than the reverse expression of predetermined profitability. In determining the economic effectiveness of capital investments and new techniques a uniform normative recoupment period is gaining more and more recognition.

The efforts of economists should therefore be devoted to constructive study and use of everything valuable to be found in the different viewpoints, and not to breaking a lance at the approaches to the given problem or to arguing about questions that have long been settled.

To judge the merits or demerits of any of the principles of price formation accepted it should be remembered that a socialist society cannot rely on automatic operation of the principles of price formation. At the same time it is important that price-fixing bodies have a more perfect method of determining prices, a method which would reduce errors and shortcomings of a subjective nature to a minimum.

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Footnotes

(1) I. S. Malyshev, *Obshchestvennyi Uchet i Tsena Pri Sotsializme*, Sotsekgiz, 1960; V. A. Sobol, *Ocherki po Voprosam Balansa Narodnogo Khoziaistva*, Gosstatizdat, 1960.

(2) V.A.Sobol, op.cit., p. 64.

(3) *Voprosy Ekonomiki*, 1960, No. 10, p. 84.

(4) *Voprosy Ekonomiki*, 1961, No. 3, p. 90.

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Voprosy Ekonomiki, 1961, No

V. Novozhilov

CALCULATION OF OUTLAYS IN A SOCIALIST ECONOMY

Economic literature today gives much attention to the problem of the planned utilization of the law of value and to methods of calculating outlays. Economists differ, however, over the nature of the shortcomings in the calculation of outlays and how they can be eliminated. Some believe that prices of output should be set at the level of its value, while outlays should be calculated according to the individual value of each product. Other economists hold that price formation and calculation of outlays should be based on the price of production formula. Still others think that the principles of price formation and calculation of outlays in a socialist economy do not fit within any price formation formulas of past systems and that a special, transformed form of value operates in a socialist economy which is specifically characteristic of it.

All of the participants in this discussion proceed from the same premise: outlays actually consist only of labor and value is determined by its outlay. Controversy arises only over the principles and methods of calculating outlays. In our opinion it is desirable to apply mathematics when solving this question. By means of mathematics and modern computing techniques we can greatly improve the methods of calculating outlays in a socialist economy.

The problem of the principles involved in the calculation of outlays under socialism can be solved only on the basis of Marx's theory of value. Consistent application of the major propositions of this theory under socialism is of decisive importance for elaborating the principles of optimum planning.

Let us move from the abstract to the concrete. First we shall examine the principles of calculating outlays, ignoring the conditions that complicate such calculations. Their role is interpreted in different ways by our economists. Successively complicat the premises, we shall clarify the part each of th plays in the calculation of outlays.

We shall begin with the calculation of outlays under the following conditions: 1) optimum planning, i.e. fully corresponding to the economic law operating under socialism. This means that the methods of calculating outlays allow us to draw u a plan requiring the *minimum* outlay of social lab to produce the stipulated output. 2) *The administrative organization of the national economy is based on the principles of democratic centralism* This means that the cost accounting outlays must reflect the outlays of the national economy in suc a way that the minimum of cost accounting outlay is always a true indicator of the national econom outlays. 3) *Relatively better means of productio are not limited*: the program of end-product out can be fulfilled with the use of only the best cond tions for the application of labor. This, in our v is unrealistic, but it helps to explain the significance of a condition whose role is the main sour of disagreement on the question of calculating ou lays — the shortage of certain resources. We sh subsequently replace this proposition by a more realistic one — the shortages in a number of the best means of production — and compare the cal lation of outlays with and without such shortages This will make it possible to determine the impo tance of shortages in particular resources in ca lating outlays.

Under the above conditions the optimum plan, regards outlays, will be the one in which *every* product is turned out with minimum outlays of labor. To draw up such a plan it is necessary t find a variant of production for every enterprise and section which will ensure the *minimum* ividual cost of production. After all, the third position shows that the individual cost minimums compatible with each other and with the minim cost of the entire end-product of the national nomy. That is why the prices for means of protion in the optimum plan must equal their cost, le outlays for each given product must be calcued from its individual cost in drawing up and plementing the plan. Under these conditions the ference between the social and individual costs of duction of the enterprise must be the basic cost counting index. An enterprise operates in acdance with the optimum plan if this difference als zero. Above-plan profit would mean that the erprise has improved on the norms of the optim plan (by mastering new techniques, for innce), while losses would mean the opposite.

Let us now replace the third proposition by a new : some means of production cannot be reproed and are in short supply as compared to dend for them. It is obvious that this condition atly complicates planning, cost accounting and tribution according to labor.

Planning is complicated by the fact that as a conuence of the scarcity of the best means of produc the minimums of the individual costs of prods in whose manufacture these best resources can used become incompatible with each other. In s case it will not suffice to calculate the cost of given product to find plan variants corresponding he minimum outlay of labor on the entire social duct. It is also necessary to calculate the effecness of using limited resources in the given protion and to compare it with the effectiveness of ir possible application in other sectors of produc1.

Economic calculation is complicated by the fact t divergence of the individual cost of production ny enterprise from its value reflects not only the lity of the latter's work, but also differences in effectiveness of the applied resources.

ncompatibility of individual cost minimums inves the incompatibility of the individual maxims of net output and net income. This means that economic calculation the principles of minimum lays and maximum results are valid only if a like ount of equally limited resources is used in the npared cases. If this condition is lacking (and is usually the case), the saving received from output's individual cost at the enterprise cannot regarded in all cases as a reflection of economy social labor. After all, the economy derived by a en enterprise through the application of raw materials that are in short supply may be exceeded by additional outlays at other enterprises, which ld have used the rare raw materials to much greater advantage, but were deprived of this opportunity. For instance, if the use of critical raw materials at one enterprise yields an economy of one million rubles, while other enterprises could have saved two million rubles by using them, it will mean depriving the national economy of a saving of one million rubles.

A scarcity of the best resources also complicates distribution according to labor. Under these conditions synthetic indices of the results of living labor — net output and net income — depend not only on the quantity and quality of labor, but also (very often even to a greater extent) on its equipment with the means of production.

In order to surmount these difficulties we must solve the following problems: 1) When planning it is necessary to draw up an optimum balance of scarce resources, meeting the following requirements: a) every variant for using scarce resources adopted in this balance must conform to the program of turning out the national economy's end-product and ensure greater labor economy than any of the rejected variants; b) the total requirement of scarce resources in this balance is fully met by the available stock in hand. 2) Economic calculation must be organized in such a way that the enterprise's savings in outlays reflect the economy of social labor, the minimum cost accounting outlays are compatible with each other and with the minimum cost of the entire social product, and all enterprises are placed in equal conditions for the application of labor so that enterprises disposing of better resources will not enjoy cost accounting advantages as compared to enterprises possessing less effective means. 3) Indices of labor results must not depend on its equipment with means of production. They are called upon to reflect only differences in the quantity and quality of labor.

All these problems are solved through the planned application of the law of value, with the assistance of the methods of optimum planning.

Commodity prices are determined by the law of value, but at the same time they depend on demand and supply. Moreover they serve to adjust demand to supply. In a planned economy, adjustment of demand to supply for a scarce resource means to balance the planned need for it with the available stocks by fixing a single value norm of effectiveness of its use. This norm must express the minimum economy of labor yielded by application of a unit of the scarce resource in the optimum plan. By including in the outlays for the production of a given product the normative effect produced by the use of a quantity of this resource, (1) we can check the degree to which the given application of the resource meets the optimum plan, and whether it is sufficiently effective. This check is done by comparing the outlays, calculated with due account for the normative effect of the resource's use. Selection of the most effective variants for the latter's use is done according to the principle of minimum outlays.

Proceeding from minimum individual outlays (with due regard for the normative effect) and having drawn up, in accordance with this principle, a plan for the output of the needed end-product, let us determine all the variants for using the scarce resource which yield the greatest economy of labor. In this any single norm of effectiveness ("price") of the scarce resource meets the requirements of point "a" (every adopted variant is more effective than any of those rejected). The very same norm of effectiveness, under which the planned need for the limited resource is adjusted to the available supply, also meets the requirements of "b." The following is convincing evidence of this.

Let us assume that the scarce resource can be used in the production of n different products, and that all of these products are included in the production program of the national economy.

The cost of making these products with the use of the scarce resource shall be indicated by $C_1, C_2, \ldots, C_n$, and the quantity of the said resource needed for this purpose correspondingly by $q_1, q_2, \ldots, q_n$. The cost of the same products without the use of the given resource shall be indicated by $c^0{}_1, c^0{}_2, \ldots, c^0{}_n$. (If any product cannot be produced without the use of the scarce resource, its cost (c^0) is assumed to be infinitely high.) (2)

Let us denote the aggregate norm of effectiveness of this resource by r. (3) Then the normative effect from the use of $q_1, q_2, \ldots, q_n$ units of this resource will be $rq_1, rq_2, \ldots, rq_n$, and outlays for each of the n products, with due regard to the normative effect from the used resource, will amount correspondingly to $c_1 + rq_1, c_2 + rq_2, \ldots, c_n + rq_n$.

Let us assume that for the first ℓ products these outlays are less than or equal to the cost of putting out the products without use of the scarce resource, that is, less than or equal to $c^0{}_1, c^0{}_2, \ldots, c^0{}_n$, and for the remaining $n - \ell$ products they are greater than $c^0{}_{\ell+1}, c^0{}_{\ell+2}, \ldots, c^0{}_n$. Then, planning the use of the scarce resource in the output of the first ℓ products, we obtain the most effective plan for using it: each of the variants adopted in the plan for the utilization of this resource will be more effective than each of the rejected versions.

To prove this let us write down inequalities showing that outlays of the type $(c + rq)$ for each application of a resource adopted in the plan are smaller than or equal to the cost of producing these products without this resource, while for each rejected variant they are greater:

$$\begin{array}{ll}
c_1 + rq_1 \leqslant c^0_1 & c_{\ell+1} + rq_{\ell+1} > c^0_{\ell+} \\
c_2 + rq_2 \leqslant c^0_2 & c_{\ell+2} + rq_{\ell+2} > c^0_{\ell+} \\
\ldots\ldots\ldots & \ldots\ldots\ldots\ldots \\
c_\ell + rq_\ell \leqslant c^0_\ell & c_n + rq_n > c^0_n
\end{array}$$

Now let us regroup these inequalities in such a way as to have on one side indices of the actual effectiveness of using a scarce resource and on t other — the norm of its effectiveness.

$$\begin{array}{ll}
\frac{c^0_1 - c_1}{q_1} \geqslant r & \frac{c^0_{\ell+1} - c_{\ell+1}}{q_{\ell+1}} < r \\
\frac{c^0_2 - c_2}{q_2} \geqslant r & \frac{c^0_{\ell+2} - c_{\ell+2}}{q_{\ell+2}} < r \\
\ldots\ldots\ldots & \ldots\ldots\ldots\ldots \\
\frac{c^0_\ell - c_\ell}{q_\ell} \geqslant r & \frac{c^0_n - c_n}{q_n} < r \qquad \text{(I}
\end{array}$$

Ratio $(c^0_i - c_i)/(q_i)$ expresses the saving in production costs derived from the per unit application c a limited resource, that is, the effectiveness of its utilization in producing the i-th product (i = 1, 2... Let us denote it with E_1. Then inequality (I) can expressed in the following form:

$$\begin{array}{c|c|c}
E_1 & & E_{\ell+1} \\
E_2 & \geqslant r > & E_{\ell+2} \\
\ldots & & \ldots \\
E_\ell & & E_n
\end{array}$$

The left-hand column shows the effectiveness c plan variants for the per unit use of scarce resource, and the right-hand one — the rejected va ants. In view of the fact that the center column c sists only of magnitude (r), the effectiveness of each adopted variant is greater than that of each rejected version. (4)

Thus an important function is discharged by th single norm of effectiveness (single price) for means of production that are not freely reproduc it narrows down the range of the most effective v sions for the use of a scarce resource. Apparen this function can be discharged by any uniform price of this resource contained between the ma mum and minimum magnitudes of effectiveness c the variants of use. But only one of these prices serves as a borderline, balancing the need for th given resource in the adopted versions with the available supply. To determine this norm mean in effect, to find an optimum plan for using the limited resource.

If there was only one type of scarce resource the national economy, the optimum plan for its utilization and the norm of its effectiveness coul be determined rather easily by simply selecting for instance, the most effective variants of its a plication. (5) In reality, however, the range of such resources is much greater. First, they

mprise soils, minerals, etc. Second, there are a
ostantial quantity of goods whose reproduction in-
ves certain limits. Thus the output of all repro-
cible means of production is restricted by the
ume of the national economy's accumulations.
rthermore the reproduction of a part of the availa-
productive assets in their previous form now be-
mes ineffective because of their obsolescence,
ugh they can still be used effectively. Finally the
of the most up-to-date machinery is also
stricted by the fact that a definite period of time
needed to put it into production.

The limited nature of accumulations finds ex-
ession in the fact that their volume is smaller than
opportunities for effective capital investments.
e non-reproducible factor here is the period of
oduction and circulation. Since the time needed to
oduce anything is an indispensible element of pro-
ction, it places a definite constraint on all the
producible means of production. It is precisely
cause of this limitation that the growth of planned
cumulations lags constantly behind the growth of
portunities for effective investments.

The quantity of obsolete means of labor is fixed in
lifferent sense than is the quantity of natural re-
irces or even of capital investments: natural re-
irces and production time cannot be reproduced,
ile the reproduction of obsolescent implements of
or is unprofitable. Linked with this distinction is
listinction in price-formation: non-reproducible
tors tend to raise prices, while the unprofitability
reproduction depresses prices below the cost of
oduction.

With fixed supply the price of obsolete means of
oduction is set not at the level of their reproduc-
n costs, but at a lower level. Let us assume that
cost of reproducing an obsolete raw material
ials C_y, the cost of new raw materials — C_n, the
st of processing these types of raw materials into
inished product equals P_y and P_n respectively.
e surplus payments equal $(C_y + P_y) - (C_n + P_n)$ if
use the obsolescent raw materials. Writing off
se surplus payments from the cost of reproducing
obsolete raw material, we can get its cost with
e regard for obsolescence: $C_y - [(C_y + P_y)$
$C_n + P_n)] = C_n + P_n - P_y$. This means that the
ce of obsolete means of production equals the
st savings derived from their use instead of from
technically up-to-date equipment, assuming that
cost of obsolete equipment equals zero. (6) If
s calculation shows that the price of obsolete
ans of production is not below zero, they can and
st be used in production. Many obsolete means
production can be classed in this category —
iipment which is obsolete for reproduction, but
for utilization.

Under the first form of obsolescence, when means of production are reproduced in their previous form, but at a lower cost, the cost savings from their full utilization equal the cost of their reproduction. Thus calculation of prices on the basis of cost savings is a consequence of the fact that the cost is determined by the outlays for reproduction.

A temporary shortage of the latest equipment boosts its price above its value, but in conformity with the same principle that applies to prices of obsolete means of production: depending on the effectiveness of their use. Temporary wholesale prices on new types of machine-building and metalworking products should be set according to this principle.

According to the decision of the Party Central Committee and the USSR Council of Ministers "On the Economic Stimulation of Enterprises and the Raising of the Material Incentive of Workers in the Development and Introduction of New Machinery and Technology and in the Integrated Mechanization and Automation of Production," these prices must be determined in conformity with the level of the existing wholesale prices on previously mastered products which are analogous or similar in design or purpose. Corrections should be made for higher productivity, as well as other technical and economic advantages enjoyed by the users of the new production (lower production costs, higher quality of produced articles, better working conditions). Such a price greatly encourages the use of new machinery. At the same time it promotes its production, inasmuch as its temporary nature induces machine-building plants to put the new machines into production more quickly.

Thus we see that restrictions are also placed on the reproduction of the so-called freely reproduced means of production. The law of value takes these constraints into account by means of prices which equate demand and supply. Stable deviations of prices from value appear in the process. At the same time it becomes necessary to evolve effectiveness norms for the use of resources or factors that have no cost at all.

What is the sense of a value calculation of outlays for factors which have no cost? It was noted above that prices adjusting the demand for scarce means of production to their supply may discharge an important function in the planned management of the socialist economy: they may aid in drawing up the optimum balance of these resources and, thereby, for determining the aggregate minimum of labor outlays on the entire end-product of the national economy. Prices of non-reproducible resources, in turn, express such increments of outlays on the production of other products, which are linked with the application of a unit of these resources in the output of any product. There would be no such increments (or they would have been different), had the given product been produced differently (on another plot of land, for instance).

Indeed the outlays on various products, due to the limitations placed on non-reproducible resources, are connected not only directly but inversely as well, which means that they are related in such a way that the selection of a variant with the smallest outlays for a given product causes a rise in outlays on other products, and vice versa. Thus the use of the best land for growing wheat, let us say, cuts labor outlays in its cultivation, but simultaneously raises outlays on the production of crops which could be obtained from this soil with smaller outlays than on other plots. Here is another example: selection of a production variant in which the product is obtained with smaller outlays, but with greater capital investments, boosts the cost of those products whose output should get less investments because funds are allocated to the expansion of the former.

It follows from this that it is necessary, when determining a variant conforming to the aggregate minimum of labor outlays for the entire end-product of the national economy, to measure not only the outlays for producing the given product, but also the increments of outlays on the output of other products brought about by precisely this kind of utilization of the best means of production. Let us call such increments of outlays on other objectives the inverse dependence outlays. Then we can say that the variant conforming to the aggregate minimum labor outlays for the entire end-product of the national economy is the one which ensures the lowest total outlays on its production considering the inverse dependence outlays. The index of the magnitude of this sum is of great economic significance: it expresses the change in outlays on the reproduction of the entire end-product caused by the production of the given product. In turn, calculation of outlays as increments of a variable magnitude permits us to call them differential outlays of the national economy for the given product. In value terms differential outlays for the production of particular products equal the difference between the cost of the national economy's end-product, including the given product, and the cost of this production with the same limited resources but without the production of the product in question.

It follows from what has been said that measurement of differential outlays not only does not contradict the thesis that outlays involve only labor, but is based on it. Differential outlays are a special form of measuring labor outlays derived from labor expended on the production of the entire social product and serving to find that variant of the production c the given product which corresponds to the minimum outlays of labor for the entire social produc Under the operation of the law of value, these outlays are expressed by the transformed form of value.

The objective necessity of this transformation of value in the socialist economy is based on the fact that the law of economy of labor operates whe there are several scarce (non-reproducible) factors of production. Therefore it is objectively necessary to take stock of the limitations in the form of prices of scarce resources (or norms of their effectiveness). However the normative effec from the use of scarce resources cannot be added to the overall cost of the product, inasmuch as the sum of prices for the end-product would then exceed their total value. This means that the value accounting of the use of scarce resources should be included in the value of the social product in such a way that the algebraic sum of price deviations from the value of end-products would equal zero. Thus value accounting of the use of scarce resources can be effected only through the creation of a transformed form of value. This calculation must be superimposed on magnitudes proportional to values. Moreover the coefficient of proportionality must be equal to the ratio between labor outlays on the national economy's end-product and the sum of the differential outlays involved. This means that the wage fund of worker employed in the sphere of material production must account for the same share of the end-product's cost as outlays on its production in the total sum of differential outlays for this product.

The norms of effectiveness for scarce (fixed) resources may be differently named depending on the type of the means of production to which they belong. Thus for reproducible but no longer reproduced implements of labor these norms express the prices of implements of labor that are too obsolete to be reproduced (buildings, structures, equipment). The norms of effectiveness are, so to speak, a sort of rent for their use, calculated wit due regard for their lower effectiveness, i.e. for both actual wear and tear and obsolescence. For natural resources they will express differential rent, and for all capital being reproduced — the norms of investment effectiveness.

The form of value transformed by means of these norms is similar to the price of production This similarity springs from the fact that the pri of production is a spontaneous and imperfect valu expression of differential outlays. (7) However there are also substantial differences between th price of production and the transformed form of val

Jnder socialism the law of value is not a regulator
production. The category of capital, and the com-
ition of capitals which leads to the formation of
ces of production, does not exist under socialism.
a result, methods of determining the transformed
m of value under socialism cannot be deduced
m the price of production formula, since all the
rms for calculating this form of value serve the
rpose of optimum socialist planning, while the
ce of production is formed in a different way.
Therefore it would be more correct to give this
m of value a special name. Moreover, it is ex-
lient to have two terms: one for designating in-
idual costs in the transformed form, the other —
social costs.

Actually such terms have long been in circulation
the form of the terms "production costs" [sebes-
mosti] and "planned price," but these terms lack
equate content. Indeed, production costs reflect
ther production outlays nor differential outlays
ly. This is borne out even in their definition as a
t of value.

But can we be satisfied with an index which does
express all outlays, but only a part of them?
actice is not satisfied with it: production cost is
regarded as the only index of outlays. However
practice the production cost index is supple-
nted not by the index of the value of product cre-
d by living labor for society, but by other indices;
ital investments (for projected enterprises), in-
es reflecting the use of productive assets (for
sting enterprises), expenditures of scarce mate-
ls, terms of construction, etc. Consequently
ctical experience shows that production costs
st be supplemented by inverse dependence outlays,
l that overall production costs must reflect differ-
ial outlays.

What makes us strive for a cost measure of dif-
ential outlays? The law of economy of labor: its
plementation is rendered difficult by gaps in the
culation of inverse dependence outlays.

nasmuch as production costs practically do not
lect the inverse dependence outlays, their indi-
ual minimums are, as a rule, incompatible. That
why in practice the index of production costs is
plemented by other indices, taking into account
limitations causing incompatibility of individual
duction cost minimums. As a result we see that
ducts costs so many rubles plus so many tons of
rce materials, plus such and such capital invest-
nts, plus a certain period of construction, etc.
e problem arises of the commensurability of pro-
tion costs with other outlay indices, that is,
ually, the problem of calculating the unaccounted
erse dependence outlays.

This breaking down of outlays into heterogeneous elements demonstrates the need for calculating inverse dependence outlays and, consequently, their inclusion in production costs. Therefore, to our mind, estimation of outlays and price formation will develop from the production cost index as part of value to the index of overall production cost as a special economic category: the socialist transformed form of value. (8)

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Two problems arise in moving from the principles to the methods of the planned use of the law of value: how to calculate the cost of every product (which is the basis for calculating the transformed form of value) and how to determine the host of effectiveness norms for scarce resources.

At first glance it may seem that calculation of the overall outlays of labor in value form is an arithmetical problem, rendered difficult mainly by the multitude of initial data. In reality, however, this is not so. The need to use higher algebra in this calculation is dictated by the fact that production relations among different branches have a mutual rather than unilateral character. The movement of products occurs correspondingly. For instance, the machine-building industry consumes fuel, while the fuel industry needs machinery. Under these circumstances one must solve the same system of equations to determine overall outlays in the production of any product as advanced more than sixty years ago by V. K. Dmitriev: (9)

$$x^i = a_{i1}x_1 + a_{i2}x_2 + \ldots + a_{in}x_n + t_i \quad (i = 1, 2, \ldots n) \qquad (2)$$

where x is the cost of the i-th product, t_i — outlay of living labor on the i-th product in the form of value, a_{i1}, a_{i2}, ...a_{in} — expenditure of each of the n products on the production of the i-th product.

If we substitute for the overall cost of the product of living labor (t_i) the wages, x_i will express a figure proportional to the values, which is practically needed for the calculation of the transformed form of value. It is not difficult to solve this system of equations if their number is not big. But when the system consists of a multitude of equations the computing task may prove to be beyond the powers of modern electronic computers.

With these reservations it can be said that V. K. Dmitriev's equations are sufficient for calculating the actual cost. Then the expenditure coefficients of the means of production (a_{i1}, a_{i2}, ...) and the outlay of living labor (t_i) must be taken in their average significance. However V. K. Dmitriev's equations are inadequate for estimating the planned cost, inasmuch as calculation of planned outlays is inseparably tied up with the drawing up of the plan. V. K. Dmitriev's equations do not include those limitations on means of production which must be taken into account if the plan is to be realistic.

These equations are not sufficient even to calculate costs for the plan's variants (let alone in determining the optimum one). If we use equations (2) to calculate the cost of reproduction, equations of the cost of products that are no longer reproduced will drop out of their system. In the meanwhile many of them are used in the reproduction of other products. Therefore the cost equations of other products will contain as unknowns the costs of reproducing products that are no longer reproduced. As a result the number of unknowns in the equation system will be greater than the number of equations.

However if we supplement V. K. Dmitriev's equations by methods of the cost accounting of reproduction limitations, it will be possible to calculate both the cost and its transformed form — overall production costs.

Indeed the unknown costs of reproducing those items which are no longer reproduced can be assumed to equal either the cost of their production (in the past), or zero. Given any of these assumptions, the number of unknowns will become equal to the number of equations. However in this case solution of the equations, will give either exaggerated or underestimated costs of products, which will have to be corrected by taking into account either the obsolescence of the utilized obsolete implements of labor, or such a cost of their reproduction as would reflect the differences in effectiveness of the obsolete and new instruments. For this purpose we determine effectiveness norms for the use of obsolete machinery (by the same methods as the effectiveness norms for non-reproducible resources). If these instruments had been evaluated according to the cost of their production (in the past), the effectiveness norms will be negative (they will reflect their obsolescence). If the cost of these implements was taken as zero, their effectiveness norms will express the cost of reproducing the equipment replacing them, with due regard for the differences in production capacities and operating costs.

How are the effectiveness norms of non-reproducible resources determined?

The difficulty of this task, as pointed out above, lies in the fact that there are not one but many types of scarce resources. Therefore plan variants often differ from one another as regards outlays of two or more scarce resources. In such cases the economy of costs yielded by the joint application of q_1, q_2, ...q_n units of different resources constitutes a uniform, indivisible effect from all these resources. (10) It follows that it is impossible to calculate the true effectiveness of every resource separately, to draw up an optimum balance for each of them divorced from the balances of other resources, to determine the effectiveness norm for one resourc divorced from the effectiveness norms of other resources. And since at least one limited factor is used in all branches of the national economy — th factor of time — it follows that the effectiveness norms of limited resources can be determined on in the process of compiling an optimum plan for t development of the entire national economy.

One of the ways to find such norms is suggeste by the law of value. It is necessary to find such effectiveness norms for critical resources as would balance their planned requirements with the planned stocks. The method of tentative norms ma be used for drawing up the given system of balances, checked by comparing the need for each on of the resources and its available reserves, corrected and again verified by the balance method until the balances of all the limited resources ar properly adjusted. This method, however, does n guarantee that every rise of the effectiveness nor when there is a shortage of resources, or every fall, when they are in excess, will improve the pla bring it closer to the optimum. (11) Thus the planned reproduction of the mechanism of equatin demand with supply through prices does not guara tee that this equality will be attained. Hence it follows that the problem of correcting the effectiv ness norms in conformity with requirements for t resources and their available reserves, must be linked with mathematical methods of optimum pla ning, which ensure the steady perfection of the pla and its development to the optimum level. Such methods have already been evolved to a certain d gree (linear programing, dynamic programing, et However their elaboration and adaptation to problems of economic planning is a difficult task.

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The application of mathematical methods of optimum planning will permit us to improve not only planning but also the system of economic accounting and distribution according to work.

Indeed overall production cost possesses all th elements necessary for the organization of improved economic accounting. Thus its individual minimums are compatible with each other and wi the minimum outlays of labor on the whole end-product of the national economy. Furthermore it calculation places all enterprises on an economically equal footing as regards the application of l bor: the "better" are the resources at the dispos of an enterprise, the more it pays for them in the form of rent, differential rent, credit payments, etc. Therefore the overall production cost of on type of product, produced in different labor condi tions, will tend to level out, thereby increasing t

portance of profitability. Moreover the price of
assimilated means of production in an optimum
n should, as a rule, equal the average overall
oduction cost. Prices on certain consumer goods
n digress somewhat from their overall production
sts, but it is advisable to compensate for these
ressions by means of the turnover tax. Then the
imum plan norms will be a requisite of every
erprise's operation without losses, the mastering
new machinery will be a requisite for its profi-
bility, and failure to fulfill the plan — the reason
losses. The latter will arise, in particular,
en inadequately effective use is made of capital
estments, production funds, natural resources,
alone of living labor.

These properties of overall production cost are
uable not only for economic accounting but also
distribution according to work. The law of dis-
bution according to work requires that the cost
ices of the efficiency of individual sectors of pro-
ction (enterprises, shops, etc.) should not depend
labor conditions which cannot be influenced by
m. Otherwise these indices cannot be used for
tribution according to work. The need for con-
ting the qualitative characteristics to equal con-
ions of labor is confirmed by socialist economic
ctice. When determining results indices at-
npts are made in practice to isolate them from
influence of factors that do not depend on the
erprises, but the methods used for this purpose
still not very effective. (12)

***

t follows from what has been said that in opti-
m planning we must proceed from the following
sic premises: 1) the value of commodities is
ermined by the socially necessary labor expended
their production, and therefore the prices of
ely reproduced commodities gravitate towards
ir value; 2) the prices of non-reproducible re-
rces gravitate to levels where demand for them
met by supply. The first proposition makes pos-
le the mathematical formulation of the conditions
forming value, the second — the conditions for
transformation.

The principal conclusion of our article is that the
of value expresses the operation of the law of
economy of labor not only by the first proposi-
n, but by the second one as well. Although non-
roducible resources do not have any value of
ir own, their prices reflect definite labor outlays,
nely the increment of labor in the production of
er commodities, stemming from the use of units
non-reproducible resources in the given sector.
nasmuch as non-reproduced resources do not
e any value, their outlays, calculated according
these prices, are not included in the cost of the
corresponding commodities. This leads to the transformation of value, i.e., to stable deviations of prices from values, which balance each other out if we consider the end-product of the national economy as a whole. Thus a third proposition arises from the above two: the prices of commodities in whose production scarce non-reproduced resources are used gravitate towards transformed values. Since the prices of non-reproduced resources have a labor content, the transformed form of value also reflects definite labor outlays — differential outlays of the national economy for the given product. (13)

The need to calculate planned outlays according to the formula for transformed value entails the need to estimate actual outlays according to the same formula, inasmuch as accounting indices should correspond to the plan indices with respect to methods of calculation.

This is how the need finally arises to include magnitudes in the actual outlays which are really not outlays — the normative effect from using scarce resources.

It is worth noting in connection with the application of linear programing in the national economy that the mistrust of this method by economists, to our mind, is partially explained by the fact that L. V. Kantorovich attaches too universal a significance to resolving multipliers in his mathematical-economic models. In his view, all prices in the optimum plan are resolving multipliers (objectively conditioned evaluations); even labor is given its objectively conditioned evaluations. We cannot agree with this. This means that the mathematical model of price formation does not reckon with the substantial difference between the scarcity of non-reproducible resources and of labor. Labor is limited in another, higher sense of the word than are natural resources or capital investments: men strive to cut its outlays to the minimum and to make maximum use of the conditions of its application. That is why the resolving multipliers in the model of planned price formation can only be the effectiveness norms of scarce resources. But in this role the resolving multipliers are an indispensable instrument for the optimum planning of the socialist economy, because they reflect that function of the law of value without whose use it is impossible to attain the optimum in the planning of the national economy — the function of the cost accounting of the use of scarce resources in production.

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In conclusion let us touch briefly on the remarks of A. Katz. (14)

Katz asserts that the methods I proposed for determining the total maximum effectiveness of capital investments and all the means of production in general, "are, in effect, based on the primacy of social demand and supply over production." (15)

This is incorrect. The indicated scheme of an optimum plan is based on the primary of production over demand and supply. This primacy is embodied first of all in the very fact that it raises the question of determining minimum labor outlays. Moreover the prices of all the reproduced means of production in this scheme express the transformed form of value, and consequently, in the final count, value: it is assumed that demand and availability of reproduced goods in the optimum plan will be accurately adjusted through production. Moreover the prices of the new means of production created in the planned period must, as a rule, be drawn up according to the average national economic cost. The previously produced means of production are evaluated in this production cost formula according to the principle of costs of reproduction: after all, evaluation according to the inverse dependence outlays, for the reproducible means of production, is a generalization of the rule of evaluating according to the outlays on reproduction. (16) "Demand and supply" in this scheme determine only the effectiveness norms for the non-reproducible resources and conditions of production. But they, too, are based on the determination of the size of the economy of social labor in production.

In this connection there are no grounds for the assertion that in my work the outlays of labor and "evaluation of scarcity" of production factors are placed on a par, as is done in the works of bourgeois economists. We know that the general equilibrium models of Walras and others minimized production outlays, calculated as the sum of prices of the "services of factors of production" — labor, capital and land. The proposed scheme seeks a common minimum of labor outlays. Production funds, capital investments and natural resources figure here only as conditions of the application of labor. Furthermore the general equilibrium models deduce prices on means of production, and through them prices on "service factors in production," from the value or utility of the consumer goods. In the proposed scheme, however, prices of means of production and the end-product are derived from labor outlays.

Katz's main objection is that the proposed scheme for finding the general minimum of outlays is aimed at retarding the development of technology and the rate of the growth of labor productivity. He believes that this scheme "does not select the best technical variants for observing the limit of capital investments and fulfilling the general production program for individual types of production." This criticism is directed, in effect, not against the scheme, but against long-term plans: Katz believes that the basic shortcoming of the scheme i that it proceeds from a production program and i vestment limit fixed by the plan. If the scheme does not ensure the best technology, this means that the planned relationship of investments and program provides for obsolete technology. Katz holds that the best technology is ensured by the selection of variants not according to the general minimum of outlays, but according to the minimu outlay of labor on each type of production. His recommendation is "to ensure successively mini mum labor outlays for individual types of produc tion," which "at the outset changes but little the initially unfavorable relationship of the balance c means of production and social needs, reflecting the shortage of material resources. But the furt we depart from the initial period, the more favor ble becomes the balance of means of production a social needs as a result of the successive securi of minimum outlays of labor for individual types sectors of production."

Katz's basic mistake is that he ignores the tim factor. He proposes to fix high rates of economi growth in the future at the expense of lower rate in the nearer future. As a result, adoption of his recommendations would primarily delay the fulfi ment of the Soviet Union's main economic goal. Moreover he does not even mention the need for some sort of limits for investment recoupment p riods. Meanwhile our practice attaches greater significance to the time factor than does capitali practice. This is borne out, for instance, by the short norms on investment recoupment periods which our practice is guided: not more than thre to seven years, and for some branches only — te years. These norms obviously correspond to the ratio of growth rates stipulated by the Seven-Yea Plan for output and investments. The absence of limits for recoupment periods dictates much low rates of production growth in the next seven yea than planned. Thereby, objectively, Katz substitutes for the task of winning time in the competit of the two systems a proposal to lose time in it: after all, in capitalist practice the time factor is always taken into account in economic calculatio

Katz also overlooks the fact that effective inve ments are possible even without changing the le of technology (for instance, increasing pipe diameters, reducing road grades, etc.). Such in vestments differ from investments in new machin by the fact that their effectiveness decreases wi growth. Therefore implementation of Katz's pr posals, in addition to everything else, would lea to the full use of possibilities for less effective

estments, which do not change the level of tech-
ogy, at the expense of reducing highly effective
estments in new machinery, and, consequently,
ıld retard the growth of the technical level of
nomy and labor productivity in comparison with
at is possible. The proposed scheme, on the oth-
hand, excludes such a possibility. (17)
Along with this, Katz sees a "vicious circle" in
s work because it uses mathematics to determine
long-term average effectiveness norms for in-
tments. Actually mathematics is not used at all
his question. (18) The pages included by Katz
his invented circle refer to another question. He
o finds there two "diametrically opposite views":
st, that the scarcity of individual types of repro-
ed resources contradicts the economy of labor
l should be eliminated; second, that as long as it
nains the plan must take account of it, namely in
ces. Meanwhile the "second" follows from the
rst": temporary deviations of prices from the
g-term level are necessary to eliminate more
ckly this temporary scarcity by stimulating the
duction of the product. It is necessary only to de-
mine correctly a temporary price. Katz holds
t the temporary deviations of prices from their
g-term level is bound to result in the selection of
s perfected technical means. However no expert
nner will plan investments for a period of service
say, 15 years, proceeding solely from temporary
ces on means of production. If Katz were right,
new practice of planning prices on new tech-
ogical means would delay their use. In reality,
new, raised prices will doubtlessly accelerate
duction and, consequently, the use of new ma-
nery.

Footnotes

l) Normative effect — product of the quantity of
used resource and the norm of its effectiveness.
2) This condition ensures the fulfillment of the
duction program. The scarce resource should
iously be used primarily in industries where it
not be replaced by other means of production.
3) If the scarce resource constitutes an object
abor, r will express its price per unit. If it is
eans of labor, then r will express the price of
use in a given unit of time.
l) To simplify the proof, it is assumed here
there is only one version for the use of a
ited resource in the production of every product.
ever this conclusion would not have changed if
ore realistic premise had been accepted: that
e are many ways of using a limited resource
ne output of every product.
also follows from the above that requirement
"a" is met by price uniformity for a freely unreproduced resource of a given type and quality. The price must be the same for all consumers. If value r had not been equal in all the ranks of the inequalities (I), the effectiveness of individual adopted versions for the utilization of a limited resource could prove to be lower than the effectiveness of some of the rejected variants of their application.

(5) Direct selection of the most effective variants for using a limited resource is done in the following way: 1) the indices of effectiveness are determined for each variant; 2) all the variants are arranged in the order of their decreasing effectiveness and the quantity of the limited resource needed for each of them is indicated; 3) as many variants are selected (starting with the most effective) as may be implemented with the available quantity of the given resource. The norm of effectiveness in this case will equal the effectiveness index of the least effective of the selected variants (see V. V. Novozhilov's article "Izmerenie Zatrat i Ikh Rezul'tatov v Sotsialisticheskom Khoziaistve," published in the collection Primenenie Matematiki v Ekonomicheskikh Issledovaniiakh, Sotsekgiz, 1959).

(6) Implements of labor are usually subject to obsolescence. But it is much easier to calculate obsolescence in the prices of products of labor than in the price of means of labor. This is why the principle of calculating obsolescence is explained above on the example of the price of a product of labor. The price for an implement of labor, too obsolete to be reproduced, is determined according to the same principle, but with substantial modifications. It equals the sum total of savings derived from the cost of products, which can be obtained from the implement during the remaining period of its use. Unsynchronized economy is summed up with due regard to the time factor, while the moment when this economy becomes equal to zero is regarded as the limit of the implement's period of service. The time factor is taken into account on the basis of the investment effectiveness norm.

(7) See V. V. Novozhilov's article "Izmerenie Zatrat i Ikh Rezul'tatov v Sotsialisticheskom Khoziaistve," in the collection Primenenie Matematiki v Ekonomicheskikh Issledovaniiakh, pp. 177-183.

(8) In our previous works overall production cost was termed national economic cost.

(9) See V. K. Dmitriev, Ekonomicheskie Ocherki, 1904, p. 3.

(10) Contrary to the accepted view, the index of the recoupment period of capital investments does not reflect, in most cases, the effectiveness of these investments: the variants compared in this

index usually differ not only as regards investments but as regards the outlay of other scarce resources. This is why solving the problem of investment effectiveness (investigating the actual effectiveness of investments, determining the norms of their effectiveness) without finding the effectiveness norms for the other scarce resources is an attempt with unsuitable means.

(11) R. Frisch, V. V. Novozhilov's Method of Process Selection and Its Transformation into Linear Programming Problem. Memorandum fra Sosialokonomisk Institutt Universitet i Oslo, September 27, 1959.

(12) Normalization of net income in accordance with the conditions of labor and not with the achieved level of production is a development of the tendency to normalize production assignments according to the conditions of labor (according to means of production). Consistent development of assignment normalization in accordance with labor conditio will ultimately lead to effectiveness norms for groups of uniform and equally effective means o labor, i.e., to the fixing of rent norms for the instruments of labor provided the enterprises, differential rent, etc.

(13) This is applicable to a planned economy. In a capitalist economy prices cannot have the same content as in an optimum plan. Therefore price of production formula cannot serve to substantiate methods of estimating outlays and pric in a planned economy.

(14) See Voprosy Ekonomiki, 1960, No. 11.

(15) Ibid., p. 95.

(16) See the collection Primenenie Matematik Ekonomicheskikh Issledovaniiakh, pp. 141,174,

(17) Ibid., p. 103-107.

(18) Ibid., p. 188.

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Problems of Supply and Demand

Vestnik Statistiki, 1961, N

S. Partigul

STATISTICAL STUDY OF POPULATION DEMAND

In the period of the comprehensive building of a communist society Soviet trade will be expanded in all its aspects. The naive idea that the building of communism precludes the development of trade and vice versa has long been discredited. Experience has demonstrated with sufficient force that trade is a necessary factor in the growth of the material well-being of the working people.

The new situation in the field of trade is the result first of all of the change in the relationship between supply and demand. There has been a veritable leap in consumer goods production in recent years. In 1960 meat production was 50% above that of 1953, milk — 69%, eggs — 64%. The output of woolen fabrics in 1960 was more than 1.6 times that of 1953, artificial and synthetic fibers recorded a 3.4 times increase; and the productio major cultural and household goods grew sever times. Incomes are also rising rapidly.

Real incomes of workers and office employe calculated per worker (in comparable prices) showed a 1.6 increase between 1950 and 1959, peasant incomes, in money and kind, from thei socialized and personal economies, reckoned p worker (in comparable prices), advanced 1.8 ti over the same period. This intensive growth o comes not only signifies a quantitative rise in mand; it also means a qualitative change in de e general tendencies in the changes taking place demand consist of a more rapid growth of demand r more expensive food products, a more intense mand for industrial goods as compared with food- uffs, and, finally, an even more rapid growth of mand for cultural and household goods. However ese general trends far from exhaust the entire nge of changes occurring in the demand of the oadest strata of the working people of our social- t society. The consumer's demand for goods of gher quality and finer appearance, the growing mand for new goods and for new makes of the ld" ones are a graphic illustration of the enrich- ent of tastes and the variety of needs of the Soviet ople. This is quite natural. Socialism creates nditions for the fullest development of the creative culties of every member of society, and this in rn means the comprehensive development of hu- an needs.

To cope with the growing demand and expanding versity of needs, production must grow and im- ove. N. S. Khrushchev has repeatedly stressed e need for raising the output of consumer goods to vels capable of satisfying popular demand. This int was underscored particularly in his speech at e January 1961 Plenum of the Party Central Com- ittee: "Conditions must be created in which the owing demand of the population for foodstuffs and nsumer goods will be met in full and output will ways outstrip demand."

The Party is organizing a fresh and great upsurge agriculture and a new increase in consumer goods oduction. An additional sum of 1.5 to 3 billion bles in new money will be invested under the Sev- -Year Plan for the development of the textile and otwear industries and for the expansion of their ock of raw materials. The goal is not only to have e total amount of commodities available in trade atch the purchasing power of the population, but to ve the structure of the mass of commodities cor- spond fully to the structure of consumer demand. is necessary, in particular, for the concrete sortment of goods, their colors, shapes, sizes, yles, etc., to correspond to consumer tastes and mands. It may be said that under present condi- ons assortment is the decisive factor in trade and the production of consumer goods. The assort- ent problem is not only a problem of technology d knowledge of commodities; it is chiefly one of onomics and organization.

The manufacture of goods of an assortment re- ired by the population must be based on a study of mand. In the study of demand and in the study of e assortment of consumer goods (two aspects of a ngle problem) an important place belongs to sta- tics. Assortment statistics should become as inalienable and organic a part of trade statistics as, say, the statistics of commodity supplies, circulation costs, etc.

The study of demand involves research into a very wide variety of questions. The latter may be divided into three groups. The first covers general economic indices characterizing population incomes and expenditures, the level and dynamics of consumption, and, ultimately, an analysis of the relation between income and demand. The second group involves study of the composition of the mass of commodities offered to the public. We refer to the structure of the retail trade and commodity stocks, division of the mass of commodities into basic groups of commodities, changes in the structure of commodity resources and the extent to which they correspond to changing demand. The third group of questions may include indices of the specific consumer properties of individual commodities and the degree to which these properties correspond to consumer needs: what color or model is in the greatest demand, which packaging or weight satisfies the consumer. Without study of these and similar details there can be no talk of satisfying the working people's needs. This involves the specific features of urban and rural demand, the climatic and peculiar living conditions of the various areas of the country, the influence of fashion and many other factors. Expressed in such detail and concreteness, demand sometimes differs substantially even for individual areas of one and the same region or city.

The three aspects of the study of demand are of course closely interrelated. The structure of commodity circulation is a general economic index, but it offers at the same time a concrete characterization of demand. A model or style in limited demand may be quickly bought up if the relationship of the retail prices of various makes of commodities changes. The assortment structure of demand changes with changes in income. Nevertheless the distinction between these three aspects of the study of demand is very important, particularly for determining the role of statistics in the solution of this problem.

The general economic aspect of the study of demand is primarily a function of the planning bodies, and here statistics is of decisive significance. Statistics defines the volume and dynamics of the population's income as a whole and by social groups; it has become a regular practice for the statistical agencies to draw up balances of the money incomes and expenditures of the population, which makes it possible to assess the purchasing power of the population, the structure of its expenditures and, in particular, the ratio between commodity and non-commodity expenditures. The production and distribution balances make it possible to determine the level of consumption of staple commodities. All of these indices are worked out in general, by social groups, and on a territorial basis. Budget studies of workers, office employees and collective farmers yield a wealth of information. Processing which makes it possible to fix the level and structure of consumption among the various income groups of workers, office employees and collective farmers, to classify the workers and office employees by incomes, etc. is especially important.

The general economic indices of population incomes, expenditures and purchasing power are worked out more completely in this country than in any capitalist country. What must be done is to utilize this extensive statistical material for the study of demand. We have in mind the determination of a methodology of calculation which will make it possible to establish the way in which changes in income of various groups of the population affect the structure of their expenditures, and how this in turn affects the demand for commodities and, more important, the demand for individual commodities. It should be noted that mathematical methods of research should also be used to solve these problems. The nihilist approach to the use of mathematical tools, encountered at times, is hardly justifiable. We know that modern economic literature contains studies of the coefficients of elasticity of demand in two directions: the dependence of demand on income dynamics and on price fluctuations. These and other coefficients should be used in the study of demand. But it would be profoundly incorrect to reduce the methodology of investigation of the dependence of demand on income and prices to formal mathematical computations, borrowing uncrtically from the work of what is known as econometrics. It may be mentioned in passing that there has been such substitution of mathematical exercises for economic analysis even in some of our postwar works on this subject. We have in mind certain sections of the collection of articles put out by the Labor Research Institute under the title Metodologicheskie Voprosy Izuchenie Urovnia Zhizni Trudiashchikhsia. [Methodological Problems in Studying the Living Standards of the Working People]: "An Attempt at an Economic-Statistical Analysis of the Dependence of Consumption on Family Income" and "A Schematic Analysis of the Effect of Price Changes on the Level of Working People's Consumption." The collection correctly notes the dependence of demand on income distribution and on the structural features of the budgets of different social groups, but all these observations have a purely declarative character; the analysis of the dependence of demand on income itself has a formal mathematical character. Yet in the final analysis the methodology employed in studying the dependence of demand on income should be based on an analysis of economic factors. This proposition is unquestionable under all circumstances.

For the sake of discussion, we shall present below some considerations on the methodology of analysis of the dependence of demand on income. Calculation of this dependence should be based, first, upon data characterizing the distribution of the population by income and changes of income in each of these groups, and, second, upon data on the level and structure of consumption in each of the groups. Use should also be made of more detailed indices characterizing in one measure or another the changes in demand. Thus the basic source of income of workers and office employees is wages. Hence a necessary element in the study of the dependence of demand on income is the distribution of workers and office employees by wage groups and an analysis of changes of average wages in each of these groups. But this is not enough. A concrete analysis should reveal the factors affecting the size of wages. Of decisive importance here is a differentiated statistical analysis of income changes among the various groups of workers and office employees. The coefficients of elasticity favored by the econometrists are based upon a ratio in which a growth of income by 1% results in an increase in the demand for food products by less than 1% (0.8%, to be exact), a 1.3 to 1.4% increase in the demand for clothing, and a still bigger increase in the demand for furniture, etc. But this formal mathematical scheme completely ignores the fact that the growth of the incomes of workers and office employees is due to many factors, variously influencing the changes in demand among the different groups of working people.

The growth of wages under present-day conditions results first of all from wage adjustments, which primarily means higher wages for the low-paid groups of workers and office employees. The current abolition of the income tax also affects the low-paid groups. The growing demand of these groups of working people is directed chiefly at food products. It goes without saying that the demand for livestock products, the most valuable of the food products, is rising to the greatest extent. Of the industrial products, the demand for cotton good and primarily the cheaper grades of silk fabrics i increasing with particular intensity; the demand fo cultural and household goods has been affected to lesser degree.

Rising incomes among the low-paid groups of th population have been accompanied by a normal

owth of wages among the bulk of the workers and
ice employees, as a result of greater skills,
gher labor productivity, etc. In this case, certain
the demand for food products is growing to a
sser extent than incomes, but the demand for in-
strial commodities shows a larger increase. It
ould be borne in mind, however, that even with
gard to this section of the population the coeffi-
ent of elasticity can be used only conditionally.
us, for example, intensive housing construction
uses a bigger increase in the demand for furniture
an can be calculated on the basis of abstract for-
las.

An important factor in the growth of worker family
comes is an increase in the number of workers in
e family. When such an increase takes place the
pendence of demand on income apparently de-
lops differently than in the first two cases: the
lk of this income increment is spent on industrial
mmodities and a substantial share of it on cultural
d household goods.

The wage fund grows also in connection with the
ift of part of the agricultural population to indus-
, construction and other branches. This shift
gnifies a growth of income and consequently great-
well-being for the working people. But it also
ds to a substantial change in demand, and, con-
ry to the coefficients of elasticity, it is the de-
nd for food products that experiences the greatest
crease. The structure of demand is affected by
er factors as well (for instance, by the fact that
ny workers and office employees in cities and
tlements have given up their cows because there
an adequate supply of livestock products in the
te shops, etc.).

Examination of the dependence of demand on in-
me also requires study of the structure of the non-
mmodity expenditures of population groups of
ferent income levels. The general tendency is for
share of non-commodity expenditures to rise
h rising income. This tendency operates under
cialism also, but with a substantial limitation.
e most important elements of non-commodity ex-
nditures — education and public health — are free.
ucational and health services are provided fully to
groups of the population irrespective of income.
ring the period of the comprehensive building of
mmunism the range of free services will expand.
seems to us that along with the expansion of the
here of free services the share of non-commodity
penditures will also grow through the develop-
nt of such services as tourism, the movies,
eaters, domestic services, use of taxicabs, etc.
though this question requires special discussion).
of these factors must be taken into account in
study of demand.

The peculiarities of the structure of demand of the rural population require special analysis. The construction levels of the urban and rural populations are determined primarily by income. But the structure of the effective demand of the rural population substantially differs from that of the urban population.

Statistical processing of the data on the composition of the commodity resources placed on the market for sale to the population is of the greatest importance. The structure of commodity circulation and stocks is the basic index of trade statistics. In essence, the data on the structure of commodity circulation and stocks is today practically the sole general index of the degree to which the population's demand is being met. The data on retail stocks, expressed in absolute terms and, what is especially important, in trade days, is not only of theoretical but also of practical value: it indicates the extent to which the structure of commodity resources corresponds to consumer needs. The effects of practically all of the basic factors of trade development intertwine in the commodity stocks. Accumulation of commodity stocks is above all an indication of an abundance of commodities, and in this sense is a positive factor. At present commodity stocks correspond to 80 to 90 days of trade. Before the war the supply of stocks in trade did not exceed 25 to 35 days' requirements, signifying an acute shortage of goods. That trade is more fully supplied is shown by the increase in the stocks of many foodstuffs in recent years. Thus sugar stocks at the end of 1960 amounted to 50 days of trade, compared with 25 to 30 days some three or four years ago. Stocks of foodstuffs are growing both as a result of expanding resources and of a wider assortment (which should be the main factor in stock expansion). Therefore the increase in nearly all stocks of non-food products during the last six or seven years is a completely normal development.

Stocks in trade also reflect unfavorable factors: an unsatisfactory structure of the commodity circulation, a shortage of some goods, or, on the contrary, a discrepancy between the assortment in certain lines of commodities and consumer needs which results in the growth of stocks. For a number of years furniture stocks have amounted to 22 to 27 days requirements, which is clearly inadequate. This is the level at which some perishable goods are kept. On the other hand, there is hardly any need for a five to eight months supply of woolen and silk fabrics; this is a reflection of a discrepancy between assortment and demand or of the unsatisfactory relation of prices for certain commodities at times. Stocks of haberdashery have for many years corresponded to seven or eight months of trade. Such large supplies are generally regarded as normal owing to the great variety of goods of this kind. But trade experience shows that this low turnover in haberdashery is due in large measure also to the fact that many lines of haberdashery are not in demand. Hence the large stocks of haberdashery in retail trade are due not so much to a diversity of assortment as to the fact that the assortment does not fully correspond to the demand.

The proportion of cultural and household goods in the total volume of retail trade has increased during the last six years from 5 or 6% to 11 or 12%. The proportion of these commodities in total stocks has declined, the market supply of radio equipment bicycles, refrigerators and some other goods having been reduced. An analysis of goods on hand along territorial lines, revealing discrepancies between supply and demand by regions, territories and republics, makes it possible, among other things, to reveal mistakes made by the trade organizations in distributing stocks over the country.

Determination of stocks above the norm has great practical importance. This sphere of trade statistics has not been sufficiently developed. Stocks above the norm are calculated irregularly, and no methodology of norm fixing has yet been worked out. It is the urgent task of the State Planning Commission, the Central Statistical Administration and the State Bank to work out methods of defining stock norms for commodity groups along territorial lines. Then the statistical agencies must systematically prepare data on stocks above the norm.

Statistics of stocks in trade will continue to be important as one of the basic instruments for studying demand. It is not enough, however, to study stocks by commodity groups alone; they must also be studied by assortment. The statistical agencies have gained some experience in centralized study of stocks by assortment through detailed annual surveys of stock assortments. For five years now stock-taking has been practiced each year for some 150 to 160 items as of January 1. Such calculations offer a more concrete picture of the way demand is being met than current calculations of stocks on hand. Thus on January 1, 1960 stocks of all makes of timepieces in city trade amounted to 100 and 200 days of trade, and stocks of "Kama" timepieces amounted to 320 days of trade. This comparison showed that "Kamas" were in little demand. Later their manufacture was discontinued. Here is another example: on January 1, 1960 there were 64 days of men's winter overcoats in stock (exclusive of rough woolen coats), including 110 days of stocks of small sizes and 124 days of stocks of short sizes. This was due to the fact that the industrial enterprises were interested in making the smaller size overcoats, since they require smaller outlays and the wholesale prices of sewn goods are not differentiated according to sizes.

However annual stock-taking by individual types of commodities does not solve the problem of the statistical study of assortment. To begin with, stock-taking at the beginning of the year alone is i sufficient. But there is also another, more important, point. Centralized stock-taking cannot furnis a picture of the entire diversity of consumer goods in circulation. The study of demand and assortment should be conducted along a wide front by all trading bodies and industrial enterprises in collaboration with the statistical agencies. We have in mind a detailed study of the assortment structure of commodities and its correspondence to demand. A leading, perhaps decisive, role in this belongs to the trade personnel themselves. In the final analysis, only they can and should decide wha colors, models and styles the consumer wants.

Influencing production in order to supply the com modity needs of the population has always been a major task of Soviet trade. This function assumes decisive importance at a time when the needs o the working people are growing. This does not mean, however, that the study of demand, the "figh for assortment," should be left to the trade organizations alone. The July 1960 Plenum of the Party Central Committee demanded that all heads of industrial enterprises, economic councils, planning and trade bodies study carefully and comprehensively the problem of demand. The organizational bonds between industry and trade should be constructed so as to secure a joint "struggle for assortment" in order to meet the consumers' needs.

The resolution of the Party Central Committee and the USSR Council of Ministers of August 8, 1970, "On Measures for the Further Development of Trade" devoted much attention to the relations between trade and industry. To begin with, the system of planning consumer goods production wa changed. The new element introduced was that th production plan for such goods as a whole and by assortment must be based upon orders from trad organizations and contracts concluded between them and industry. The new system radically differs from the old practice under which assortmen plans were generally adopted without consultation with the trade bodies. Usually only the major points of the plan were decided after agreement with the trade organizations, while their influence on concrete assortment was negligible. In fact, even on major points the draft plans did not alway coincide with the demands of trade. Thus the sha of prints in cotton fabric production for many yea ained at a level of 13 to 14%, although the de- d for prints was relatively greater than for oth- cotton fabrics. The discrepancy between trade ers and the volume of production in some lines very great. The order placed by the Ivanovo lesale center for cotton print No. 6 was filled nly 15% in the first half of 1960, and for No. 15 73%. To make up for this, a large quantity of t No. 3 was manufactured, although no orders for ad been placed by the wholesale center. There o doubt that trade organizations had the right to and a change of assortment when this was re- ed by the consumer needs. But these demands e not always heeded. It was especially difficult evise the assortment after the gross output plan other production indices of the industrial enter- e had been approved. If a revision of assortment to non-fulfillment of the plan of gross or market- e output, labor productivity or cost of production, economic councils and enterprises had the for- right to reject such a revision. And how often e proposed improvements of assortment been lled simply because the shift to another type of modity reduced the enterprise's accumula- s and its assignments in the budget! We note in sing that changes of assortment led only to short- n drops in accumulations, which soon rose again use the reduction of the turnover tax per unit of modity was compensated by an increase in sales. t as it may, however, the old practice seriously pered the adjustment of production to demand. new planning system has changed the situation. council of ministers of the union republics have given the right to revise the plans of the eco- ic councils and enterprises in those cases where e is a need to change the assortment. The coun- of ministers of the union republics likewise have right to increase or decrease payments into the et in connection with assortment changes. All removes serious barriers to the reconstruction tput.

he government decision provides for a number her important steps designed to introduce flexi- y and maneuverability in consumer goods pro- ion. Thus trade organizations are forbidden to pt from industry goods which do not meet their rs in terms of assortment, quality and style. nomic councils and industrial enterprises are idden to discontinue the manufacture of particu- types of goods without the agreement of the trade es. In those cases where goods are not sold and up in the trade system industry is obliged to re- e them by other goods which are in demand. economic councils and enterprises must sys- atically broaden the assortment, improve the ity of goods and put into production new models of consumer goods of better design, style and appearance. Enterprise plans approved by the economic councils must specify a detailed assortment agreed upon by the trade bodies. The State Planning Commission is charged with working out concrete measures to eliminate defects in individual types of commodities and with fixing assignments for the development and production of new commodities. Finally, an important place in the system of measures to improve assortment belongs to the expansion of direct contacts between industry and trade.

We have dealt in such detail with the relations between industry and trade in order to show how much their responsibility has grown in the correct determination of demand, especially the demand for individual types and models of commodities. However the present organization of study of demand by trade bodies cannot be regarded as satisfactory. Orders are usually based upon the subjective estimates of goods managers, salesmen and other trade personnel. These estimates often lead to serious miscalculations. Many are familiar with the lamentable case of the electric irons and meatchoppers, production of which was reduced at the demand of the trade organizations; in a year or two there was an acute shortage of these articles in trade. A similar situation developed with bicycles, the output of which was also substantially reduced at the request of the trade bodies. As a consequence, there are now difficulties in the bicycle market. The Ukrainian trade organizations in 1960 ordered five times as many makhorka cigarettes as they needed. Serious errors were made in ordering ladies' bags, certain types of clothing, etc. All this shows that it is necessary to move from rule-of-thumb methods to a scientific study of demand on the basis of mass data. Many trade organizations and enterprises have come to this conclusion.

An interesting innovation has been introduced by the Detskii Mir department store in Moscow. All bills from supply organizations are now being processed by computing centers in accordance with a very detailed program. Invoices accompanying goods to the salesrooms will also be similarly processed. Since the bulk of the department store's stock is kept in the warehouse, and the goods in the salesrooms are small and fluctuations in them can be disregarded, the difference between the goods received from suppliers and the goods going from the warehouse to the salesrooms will determine the structure of the stocks on hand and, therefore, to some extent the structure of sales. The management will thus be in possession of operational data on which types, models and styles are in greatest demand, as well as which enterprises' products are given preference by customers. This information provides orders for the production or cessation of production of particular models. The system helps to check the success of a particular change in assortment, the introduction of new models, etc.

The department store had to overcome serious difficulties in organizing the mechanized processing of assortment data. Thus the bills from many clothing and knitted-goods factories do not make distinctions according to model or style. In its contracts with enterprises the store obligated them to make these specifications in their bills. This is something that not all trade enterprises have been able to secure, but many of them have the facilities for mechanized processing of mass data. A number of trade enterprises in Moscow have had their current inventory data processed by computing centers. This practice will apparently become widespread. But inventory records must be drawn up in a more skillful manner. This in turn demands better organization in making inventories. It is necessary to work out standard forms for making inventories which name all possible items, etc. Trade organizations should be supplied with the printed forms.

Of course only large enterprises such as department stores, specialized stores, etc. are capable of processing mass data in order to study demand. The processing program should cover the widest assortment. All data obtained should be used by the trade enterprises and primary trade organizations for the sole purpose of placing orders and preferring claims to industry, and not for compiling any general statistical information for the region, territory or republic. The task of the statistical agencies consists in giving methodological aid, especially in the organization of mechanized processing.

A centralized study of commodity assortment and its conformity with demand should also be instituted. It should be based upon selective surveys of the kind now being organized in most of the republics. Such surveys are being conducted by the RSFSR Ministry of Trade in 900 shops, by the Byelorussian Ministry of Trade in 100 shops, and by the Turkmen Ministry of Trade in 40 shops. The surveys primarily embrace shops dealing in industrial goods; of the food shops, only those with a complex assortment, such as candy stores, are included in the surveys. The selected shops draw up quarterly reports on sales and stocks. Existing stocks of a given type are determined by stock-taking, newly-received goods on the basis of suppliers' bills, and sales (stock on hand at the beginning of the period, plus goods received, minus stock on hand at the end of the period) are determined by deduction.

The selective survey program cannot be as extensive as the program for processing enterprise bills and invoices. The latter provides for group assortment indices and the singling out of certain articles. Thus in the silk fabrics group the follov ing sub-groups are distinguished: natural silk fabrics, artificial silk fabrics, linings, staples, naps, etc. Within each of these sub-groups individual assortment types are calculated: Georgett crepe and crepe-de-Chine among natural fabrics, both plain and printed; among artificial fabrics, apart from the above, specific articles such as "Panama" and Prima cloths are distinguished. A similarly detailed assortment was adopted in the accounting of sewn goods and many cultural and household articles (timepieces, photographic equi ment, etc.). The assortment program can be peri odically revised in accordance with special features of demand. The singling out of assortment groups helps to establish a connection between th amount of sales, stocks and the prices of individu commodities.

In the selective surveys sales and stocks of goods other than foodstuffs are calculated quantit tively and in kind. This makes it possible to dete mine average prices for sub-groups of commodit This is one of the most difficult and, at the same time, one of the most important questions of trad statistics. Prices of individual types within a sul group of goods can differ substantially. There ar cases where enterprises, in pursuit of higher indices and, more particularly, of accumulations, have increased the output of relatively more expe sive types of commodities at the expense of the cheaper lines within the same sub-group. Processing the materials of a selective survey makes possible to reveal these assortment changes and the way they affect demand.

Selective surveys of assortment should, we believe, assume a prominent place in the basic wor of trade statistics. Their results should be wide applied in production and trade planning.

Demand analysis should make wider use of the materials obtained from surveys of the family bu gets of workers, office employees and collective farmers. The program for processing these ma rials should be organized so as to make possible more comprehensive analysis of the dependence the structure and level of consumption on the income level. In particular, grouping by income levels there ought to be a division into smaller s groups, since grouping by major indices does no always permit the determination of necessary co nections. This gives rise to the need for systematic mass surveys into the incomes and expend tures of families of workers, office employees a collective farmers, along the lines of the survey conducted in 1958.

e shall touch upon three more questions of
rtment statistics: organization of statistical
rol of the filling of trade enterprise orders by
stry, statistical analysis of the quality of com-
ities, and study of the practice of clearance
s.

ass data making it possible to control the way
rs placed by trade organizations are filled by
stry can be obtained at the principal wholesale
ers and at national and republic fairs. There
a total of 18 textile wholesale centers in the
R, of which seven or eight (Ivanovo, Moscow,
handle 70 to 75% of all textiles. These centers
ess data on the manufacture of fabrics in a de-
d assortment and compare it with orders. A
lar comparison may be made with the data of
, which keep account of the orders of trade or-
zations by assortment and of offers by industry.
ne All-Union Textile Fair in 1961 the contracts
een industrial and trade bodies specified that
rtment types of fabrics in limited demand would
upplied only within the limits of the orders
ed by the trade establishments; in previous
s these types were delivered in amounts far ex-
ing the orders. At the same time the fair
ght out the need for increasing the output of
y types of fabrics. Statistical processing of data
rders and the way they are filled will be of con-
rable importance in defining production pro-
ns in many branches of industry.

lective checks of the quality of goods entering
trade are carried out by wholesale organiza-
(when receiving goods from suppliers) and
rnment inspectors (in retail trade). The reports
e results of checks indicate the quantity of goods
fied and found to depart from standards (unfit,
ect to transfer to a lower grade, etc.). These
rts are used to assess the work of the individual
rprises. They should also be used to determine
general directions for the improvement of the
ty of goods in general and in individual branches
dustry. Processing of these reports should also
ly the answer to the question of how industry is
ting itself to the task of satisfying demand.

t us touch upon another question connected with
and analysis, the question of cutting the price of
s of outmoded style and model. The Party Cen-
Committee and the USSR Council of Ministers
eir decision of August 8, 1960, obligated all
bodies to conduct systematic clearance sales
ods of outmoded style and model and of goods
have lost some of their quality, so as to dispose
em before the end of the season. The replace-
fund for covering losses from such price re-
ons was appreciably increased; it now amounts
4% of the turnover. The trade organizations
have the right to reduce prices over and above the established standard, out of above-plan accumulations. Clearance sales of goods of outmoded style and model are something new in Soviet trade practice of recent years. Experience gained of price reductions and clearance sales has shown that a poor knowledge of demand also makes itself felt here. In many cases prices had to be cut a number of times before the goods could be sold out. One of the tasks of trade statistics is to determine the total sum of price cuts, to establish the aggregate value of the goods sold at reduced prices and, what is more important, to show how well the clearance sales do. The total sum of price cuts can be estimated from the bookkeeping accounts, but the success of the clearance sales can only be determined by special selective surveys. The program and methods of such surveys require special discussion.

Satisfaction of the population's demand largely depends on the way the trade system is organized, its extensiveness and flexibility. The target figures of the Seven-Year Plan approved by the 21st Party congress formulated the tasks of the further development of the trade network, its specialization, and the utmost development of new forms of trade. The resolution of the Party Central Committee and the USSR Council of Ministers "On Measures for the Further Development of Trade" concretized these decisions of the Party congress and outlined measures for their implementation.

Statistics must comprehensively determine how the Party decisions to improve the trade services for the population are being implemented. The questions of paramount importance, in particular, have to do with the fulfilment of capital investment plans, plans for network expansion, and orders to vacate trade premises occupied by non-trade bodies; special attention should be given to studying the development of trade in packaged goods and the use of progressive methods of trade (self-service shops, home delivery of goods, open display of goods, etc.).

The importance of efficiently organized retail trade in meeting consumer demand is evident. The organization of wholesale trade is no less important, although this is less evident. Wholesale trade, the first link in the sphere of circulation, moves goods from the producer to the various trade organizations. The handling of goods in the wholesale system is studied by statistics in sufficient detail. We are referring to the balances of consumer goods production and distribution, commodity supply computations, comprehensive statistics of goods shipments from all sources (state resources, local sources, etc.), control of fulfilment of obligations in the supply of products to the national and republic funds, study of stocks in wholesale trade, etc. But there are also unresolved problems.

The point is that the job of the wholesale organizations consists not only in "re-appointing," "shipping" goods consignments but in resorting, re-packing goods before shipping them to the retailers. The sorting of goods, of organizing them in the required assortment, is one of the basic functions of wholesale trade. At the present time, however, this function is being performed unsatisfactorily. Wholesale warehouse operations represent a bottleneck. On January 1, 1961 retail trade organizations had more than 15 million square meters of storage space of which about seven million were in state trade; wholesale organizations had only 2.3 million. Retail organizations receive goods in transit from enterprises, that is, goods which by-pass the wholesale warehouses; therefore the retail storage network may have to be somewhat broader than the wholesale network. However the existing ratio between wholesale and retail storage space does not at all meet the needs of trade. The wholesale organizations, lacking the necessary storage facilities, mechanically re-ship goods to the retail system. As a result, one type of goods accumulates at one set of trade establishments, another type at another.

Nor is there any economic justification for the present ratio between the two types of wholesale circulation — storage and transit. It is very important to develop to the utmost transit shipments of homogeneous goods of a simple assortment, where no additional sorting and combining of goods consignments are needed. In actual fact, however, transit shipments of goods of a complex assortment are practiced widely. As a result the entire output of, say, a shoe factory of one size and style produced for several days goes to one shop or trade organization. In this connection the time has come, in our opinion, to carry out selective surveys into the work of wholesale enterprises and organizations in order to determine the entire set of indices of a wholesale enterprise: the character of storage and transit operations, circulation costs and the factors determining them. A most important place in the selective survey of wholesale organizations belongs to the study of the organization of resorting of goods in the wholesale system and the degree to which retailers are supplied with sets of assorted goods.

A pressing and, to some extent, new problem of statistics is control of the supply of goods to state farm workers and the organization of retail trade and public catering on state farms. The statistical study of trade on state farms cannot be regarded as satisfactory. The difficulty of such study lies in the fact that the processing of data by the statistical agencies on the supplying of state farm workers can be made only on the basis of information received from each state farm. This work is often complicated by the fact that many of the state far keep no systematic record of how their workers employees are supplied.

What, in our opinion, is the task of the statisti agencies in exercising control over the satisfacti of the state farm workers' demand for consumer goods.

It is first of all necessary to keep a proper account of the marketable stocks of farm produc used to supply the state farm workers. Since 19 a system has been introduced under which the st farms assign quantities of meat, milk, butter, po tatoes, vegetables and other produce for the dire supply of their workers and employees. Within certain limits these products going to the state farm workers are considered as fulfilling part o the farm's obligations to the state. Existing accounts contain the appropriate indices; what is necessary is to arrange for the collection of this formation and its processing. Unless this infor tion is processed, the record of the marketable stocks from state resources will not be complet

It is also necessary to have data on the conditi of trade services in the state farms. We have in mind such questions as the size of the trading ne work and its condition and the volume of retail trade. The development of public catering on th state farms is of special importance. All these questions can be sufficiently elucidated only by means of special statistical surveys. In the thir quarter of 1961 it is intended to hold a simultane ous survey into state farm trade covering all for of supply and the trade service provided the wor ers of these farms.

Finally, the control of prices in public caterin and trade on the state farms has special significance. N. S. Khrushchev has repeatedly indicat that public catering on state farms must be chea so that not only the workers themselves but als their families can use it. Under existing rules state farms can sell produce to their workers a employees at production costs. Control of price on the state farms can be exercised by means o selective surveys.

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The past two years of the Seven-Year Plan ha been marked by new success in the development of the socialist economy. The planned control figures for the development of industry and othe branches of the economy have been substantiall exceeded. This applies also to state and cooper tive retail trade. The Seven-Year Plan control figures provided for a 15.4% trade increase in 1

1960; the actual gain was 19.6%. The volume of ds available for supplying the population will con- ie steadily to grow and, consequently, retail nover will also rise at high rates.

mprovement of the structure of commodity resources in trade, the fullest satisfaction of the varied needs of the population and better trade services are important factors in raising public wellbeing. These tasks should be given primary attention by trade statistics.

Labor and Wages

Sotsialisticheskii Trud, 1961, No. 6

Batkaev

ANGES IN THE WAGE RATE SYSTEM IN CONNECTION WITH TECHNICAL PROGRESS

Technical progress implies not only the develop- nt of mechanization, comprehensive mechaniza- ı, automation, chemical treatment, electrification, ., but the improvement of the instruments of la- as well. It is bound to lead to the emergence of forms of work organization and to higher cul- al and technical standards of the workers. "Or- ization and division of labor differ depending on instruments used. A hand-mill requires a dif- ent division of labor than one powered by steam."

This indissoluble link between technical progress the organization of production and work has sted throughout the period of man's labor activity. urvives in socialist society too, but with the dif- ence that only socialist production relations per- a rapid and really scientific organization of duction and work in conformity with the level of elopment of production techniques.

he Communist Party and the Soviet Government e always devoted a great deal of attention to king out a sound wage system and to heightening material interests of workers in the results of r labor. The wage system had to meet different uirements at different stages of development of socialist economy. This is perfectly normal, the progress of technical and production organ- ion, the growth of the cultural and technical standards and social consciousness of the workers, and, as a result, the rise in labor productivity and the growing accumulation of the socialist society, changes in the character of work and of the people's social circumstances, necessarily lead to changes in the form of labor remuneration. Moreover the concrete economic tasks confronting the socialist society at various stages of its development are also among the factors modifying the wage system.

The wage rate system is an important part of the general wage system, for all of the latter's elements (wage rates, wage scales and job classification manuals) help to determine the bulk of the wages of workers. Unlike output quotas and forms and systems of wages, which are designed chiefly to ascertain the amount of labor expended, the wage rate system makes it possible to assess the quality of labor and the specific conditions under which workers perform their tasks, i.e., to establish the relationship between the remuneration of labor and the physical exertion which a task requires, the branch of production and the district where it is performed, as well as the skill of the workers. This system also provides the basis for assessing the quantity of labor insofar as wage rates are used to fix piece rates and incentive bonuses for certain quantity indicators. It follows that the material interests of workers in the results of their labor and, therefore, the securing of a high rate of growth in socialist production, depend to a large extent on the degree to which the wage rate system conforms to the technical base of production, the cultural and technical standards of the workers, and to other factors which tend to modify this system. The wage rate system is also particularly important because the intra-branch, inter-branch and regional regulation of wages are implemented chiefly through the medium of this system.

The principal deficiencies of the wage system in industry in the postwar years stemmed mainly from outdated wage rates. Low experimental-statistical output quotas, which were often overfulfilled in the machine-building and metal-working industries by 100%, were the direct outcome of the application of low wage rates. An inadequate gap between the wage rates for hot and cold jobs, which prevailed until the wage system was overhauled, let to an almost total absence of technically sound output quotas, to the widespread use of ineffective progressive piece-rates with a steeply rising scale of rates in hot shops (smelting, forging, etc.).

Incentive systems (time rates-plus-premiums and piece rates-plus-premiums) were no longer of much help in stimulating a rise in labor productivity. Inasmuch as basic wage rates accounted for a relatively small share of the average earnings of workers, bonuses were paid out automatically for the sole purpose of preventing a drop in earnings.

The deficiencies in the wage system frequently led to violations of existing wage regulations. The low level of wage rates and an incorrect relationship between the rates of piece workers and time workers brought about an artificial upgrading of time workers. Before the situation in this sphere was rectified, there were cases in the machine-building and metal-working industries in which time workers were paid at rates set for two or three wages grades higher than the ones called for in the job classification manual. Many time workers were remunerated as the basic rates set for piece workers.

The wage rate system rests on the following interrelated elements: wage rates for grade I, wage scales and job classification manuals. It assumed this form during the wage reform carried out between 1931 and 1933 and is in force to this day. Before the wage system was overhauled in the years from 1956 to 1960, regional regulation of wages was implemented chiefly through the raising of wage rates in accordance with natural conditions or other distinctive features of a given district, and there was no special need for distinguishing a fourth element of the wage rate system, namely, regional supplements. Now that new system of wages has been put into effect, and regional wage differentiation is implemented through regional coefficients, the la ter must be considered as the fourth element of t wage system.

All these elements have a bearing on the organi tion of workers' wages. The wage rate for grade is used in such a way that the earnings of worker will reflect the exertion required in a given bran or concrete sector of production. Moreover the wage rate for grade I reflects the importance of different branches in the national economy. The wage scales and job classification manuals take a count of the complexity of the work performed an ensure the necessary dependence of wages on workers' skills.

The continuous improvement of technology and the organization of production, as well as the rise in their material well-being, require changes in a the elements of the wage system.

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The job classification manual which defines the occupational and skill characteristics of typical jobs in a given branch of production, and the theoretical knowledge and practical abilities required of workers of different skills, is a basic element the wage rate system. This flows largely from it function of reflecting the relation of the worker's skill to technology, to the instruments of labor.

Constant technical progress leads to changes i the occupational composition of the workers in al branches of production. Occupations requiring great physical exertion are gradually replaced by new occupations requiring control of machinery. The changes occurring in the character of the workers' labor must be taken into account in the wage system. The job classification manual is th principal element used to account of these change

If one compares the manuals which were issue before 1931, in the period 1931 to 1933, 1937 to 1940, and then in the postwar period, one can rea see to what extent the requirements of various trades and specialties have grown. For instance the job classification manual in force before the wage reform of 1931 to 1933 provided that a grad VI turner in various production sectors be able t do simple cutting operations, but the understandi of blueprints and of the degree of accuracy in machining was not obligatory. After the reform 1931 to 1933 a turner had to be able to perform a types of cutting operations, read complicated blu prints, and process components with a tolerance not exceeding 0.02 mm. The manuals issued dur 1937-1940 in some branches of machine-building had still higher requirements for a grade VI turn he had to know the fundamentals of the theory of metal-cutting, the technology of treatment of special grades of steel and alloys, and be able to

culate without outside help a rational schedule
machining. The manuals issued after the war,
ich were in force until the wage system was over-
iled, required in addition to everything else that
workers know the specific features of the mate-
ls which exerted an influence on the machining
ocess, and that they be able to handle the com-
te maintenance of their machine tools and check
accuracy of their performance.

Since occupations requiring heavy work are dis-
pearing becuase of technical progress, and the
cupational composition of the workers and the
aracter of their labor is changing, the difference
ween the skills of workers in lower and higher
ades is narrowing. This is reflected in a change
the approach to the theoretical knowledge and
actical skills required of workers in the lower
ades. For instance, in the 1937 manual for ma-
ne-tool production the knowledge of the proper-
s of the processed metals was obligatory for
ers in grade IV and higher; in the unified manual
related trades which is in effect now, the above
quirements are to apply to all fitters beginning
h those in grade I.

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The second element of the wage system is the
ge rate for workers in grade I. This determines
remuneration for the simplest operations per
t of time and forms the basis for wage differen-
tion depending on the workers' skills. Wage rates
grade I must reflect the physical exertion re-
red in the branch as a whole and in a section of
enterprise, as well as the importance of that
nch in the national economy. At the enterprises
different wage rates for grade I depend on work-
conditions in a concrete section and on the type
remuneration (time or piece rates).

The skill characteristics and the knowledge re-
red of workers in different grades are constantly
vised in accordance with major changes in the
hnology and organization of production. Wage
es, on the other hand, are more stable and are re-
ed only when purely quantitative technical changes
d to qualitative changes in technical equipment
l in the organization of production in all sectors
the national economy, to a growth in the cultural
l technical standards of the workers, to higher
oductivity, etc. It follows that wage rates are
anged not because of the introduction of new ma-
nery, but as a result of the increased labor pro-
tivity and skills of the workers, and therefore
ir higher earnings, better working conditions and
er factors that in the final analysis are generated
the introduction of new equipment and technology,
improvements in the organization of production.
The use of new machinery and equipment is not in itself a sufficient cause for revising wage rates for grade I for the simple reason that this machinery cannot simultaneously and everywhere replace all the old models of the same type that are currently in operation at enterprises. The replacement of an old lathe by a new, more complex and efficient model, may of course require the employment in this sector of workers with higher skills, but it is not sufficient reason to change the wage rate set for grade I operatives.

Constant technical progress which is reflected both in the qualitative improvement of machinery, equipment and technological processes, as well as in their more extensive introduction at many enterprises, also promotes a substantial rise in labor productivity and, therefore, in wages, as well as a growth in the accumulation of the socialist society.

The rise in the skills of workers in all grades, and of average earnings, at a certain stage calls for an increase in the wage rates for grade I, and consequently in the wage rates for all grades. But changes in wage rates proceed not only along the lines of raising their magnitude, but also involve a modification in the relationship between wage rates.

During the wage reform of 1931 to 1933 our country carried out a radical technical reconstruction in all industry, above all in branches of heavy industry. For the purpose of attracting and retaining in these branches a skilled labor force the differentiation of wage rates was considerably increased, depending on the importance of the particular branch in the national economy.

In period from 1956 to 1960 wage rates have been fixed depending on the importance of the branch, for the priority development of heavy industry still remains an underlying principle of the growth of socialist production. Wage rates in different branches are fixed according to the working conditions prevailing, with consideration given to the degree of intensity of production, the amount of work done in the open air, and work involving explosion or fire hazards, etc.

The gap between wage rates in different branches of production is now being reduced. This is quite logical, for extensive mechanization and automation has become a decisive factor in reducing differences in working conditions in heavy and light industry.

However, differences in wage rates for grade I still remain. Higher rates in heavy industry, which reflect chiefly more difficult working conditions and the greater importance of these branches, will help to retain skilled workers and, along with other factors, will ensure the priority growth of those branches on which the fulfillment of the national economic plan large depends.

Within an enterprise different wage rates are fixed depending on concrete working conditions in various shops (heavy work, hot or cold jobs, dangerous work), and on the type of remuneration (piece or time). In the early stage of the socialist industrialization of our country the share of heavy work in all industrial branches was still extremely high, and for that reason the differentiation of rates within an enterprise depending on conditions of work was not of great significance in the wage system. But during the wage reform of 1931 to 1933 rates in metallurgy were raised considerably for workers employed on hot and strenuous jobs (rollers, workers in ditches, workers on gas apparatus, etc.).

Today, when technical progress is based on comprehensive mechanization and automation of production processes, heavy and dangerous working conditions are an exception at socialist enterprises, and work under such conditions must be rewarded by higher wages. This is done in the first place because such work requires a greater degree of exertion and, second, to provide additional material incentives in order to attract workers to these sectors. It follows that the better the working conditions prevailing at our enterprises, and the fewer the sectors with heavy and dangerous jobs, the greater will be the wage differentiation required depending on working conditions.

The process of differentiation of wage rates within enterprises had a particular impact in the course of the overhauling of the wage system. For instance, in the machine-building and metal-working industries the workers employed on hot (heavy) jobs or on jobs involving health hazards were formerly paid at rates which were about 11 or 12% higher than those for cold jobs. When the system was revised three groups of wage rates were set: for particularly strenuous and dangerous working conditions; for heavy, hot and dangerous jobs; and for jobs performed under normal conditions. Wage rates for the first group are 21 to 23% higher than for the third; the second group has rates 15 to 17% higher than the third. However the first results of this system have shown that the wage rates for the first group are clearly inadequate. This is evident from the fact that in the hot shops the prevailing system of remuneration now is the progressive piece-rate system, while the share of technically based output quotas is small.

Higher rates for piece workers have been justified on the grounds that their work is more intensive than that of time workers, and at earlier stages of the development of the socialist economy these higher rates were used as an incentive to workers to adopt piece work. In the period 1931 to 1938 the gap between the wage rates of piece workers and time workers reached 25 to 30%, and in 1938-1939, wh piece workers accounted for more than 70% of th total number of workers in industry, the gap between wage rates for piece and time work was reduced to 10-15% in some sectors. For as the rel tive share of time workers declined there was no further need for incentives to shift to piece work Moreover, as enterprises were being equipped w more modern machinery and certain types of ope tions were being mechanized, there was a growth in the relative share of highly skilled personnel gaged in maintenance and servicing of equipment Because of the nature of their work it was difficu to set output quotas for them and therefore they were put on time wages. Thus the wide gap separating the wage rates of piece and time workers was no longer justified and was therefore reduce

Comprehensive mechanization and automation, the use of chemical treatment in production processes, and the change over from intermittent to continuously operating apparatuses require a str observance of technological schedules. In many cases the worker can no longer speed up the oper tion of machinery at will; he only supervises and controls its operation, and if necessary repairs a adjusts it. For this reason many workers who directly participate in the machine process have now been put on time rates, something that has n been done as a rule for the past twenty years.

When time rates are introduced not only for workers involved in the adjustment, repair and maintenance of equipment (equipment maintenanc mechanics, adjusters, electrical equipment specialists), but for production workers as well, differential wage rates depending on the form of remuneration are no longer called for.

There is at present a tendency to pay some ca gories of time workers at rates fixed for piece workers. During the wage system revision of 19 1960 in machine-building, permission was given apply piece-workers wage rates to time work do by production workers directly participating in technological processes with strictly regulated w schedules, as well as for maintenance workers, chine setters and equipment adjusters.

Further technical progress is gradually chang the nature and methods of production and is lead to the improvement of the organization of work the fixing of output quotas; it is therefore eviden that in the near future this process will call for abolition of differences in wage rates for piece time work. Even now, in the coal, mining, meta lurgical, food and construction industries wage rates are uniform for piece and time work.

***

The most stable element in the wage system i

wage scale, which (on the basis of the job classifi-
on manual) reflects differences in the complexity
abor and establishes the dependence of wages on
workers' skills. The wage scale consists of the
owing elements: a number of skill groups (grades),
r-grade ratios, and the range of the scale, i.e.,
ratio of lowest to highest rates.

he number of grades in the wage scale is deter-
ed by the diversity and complexity of the various
es of work, which in turn depend primarily on the
hinery, equipment and technology used in a given
nch of production. Apart from this, the impor-
e of the industrial branch exercises some influ-
e on the range of the scale.

nasmuch as the technical equipment, the level of
duction organization, the complexity of technology,
therefore the average skill of the labor force are
roximately the same at the enterprises of a given
nch, wage scales differ only according to branches
roduction. The differences in wage scales which
sted for piece and time work in certain industries
chine-building, for example) before the wages sys-
was overhauled were obviously unsound, for the
plexity of production and the skill level of the
kers are not changed by the form of remuneration.
a fact that these differences were not due to
nges in the scales as such, but to the inclusion in
e rates in 1946 of rationing adjustments. This
gave rise to a multiplicity of wage scales be-
se the ratios of the wage rates of workers in dif-
ent grades were fixed not on the basis of new wage
es, but were determined on the basis of the scales
emerged in practice after the rationing adjust-
ts were included in wage rates.

uring the period of industrialization and recon-
ction of the national economy the material and
nical base of production underwent important
nges, changes which brought to the fore the task of
tering new technology. In 1925-1926 industry's
irements for skilled workers could be met only to
extent of 25%. In order to speed up the training of
led personnel it was necessary to offer material
ntives for acquiring higher skills. The wage
es introduced in 1927-1928 did not help to solve
problem because they were based on the princi-
of the "declining curve." For example, the widely
8-grade wage scale in metallurgy with a ratio of
8 between the extreme grades was totally inade-
e for stimulating the growth of skills. The rate
rowth of inter-grade differences dropped from
between the first and second grades to 12% be-
n the seventh and eighth. The wage reform car-
out from 1931 to 1933, in heavy industry to begin
(coal and metallurgy), and then in all branches
e national economy, struck hard at wage-levelling
increased the incentives of workers to

raise their skills.

Today, as production techniques are being constantly improved and hand labor is everywhere being replaced by machinery, the operation of machinery becomes the job not only of workers in the higher grades but also of those in the lower ones. This calls for higher skill requirements of the workers in the lower grades in all branches of production.

The successes scored in our country in raising the general educational standards of all citizens will help to solve the task of training skilled workers of all grades. In the 1930's the industrial labor force grew mainly through the influx of young people from rural districts, among whom there were many poorly educated youth; today, on the other hand, industry is drawing on contingents of youth with a seven- and ten-year education.

The qualitative changes in machinery and equipment, the comprehensive mechanization and automation of production are radically changing the occupational composition of the workers and the nature of their work, raising their cultural and technical standards and reducing the essential distinctions between mental and manual work. Moreover, these factors create the conditions for a sharp reduction in the skill differences between workers of all grades through a gradual elimination of unskilled labor.

All this must be reflected in changing wage scales, primarily through a reduction in the range of rates, i.e., the difference between the wage rates of highly-skilled and other workers. Until the wage system in industry was overhauled almost 3/4 of the workers were paid according to an eight-grade wage scale with differing ratios of lowest to highest rates. More than 10% of the workers were paid on the basis of a seven-grade scale. Some industrial branches used 10- 12- and even 15-grade wage scales, and the ratio of extreme rates ranged from 1:3 to 1:4. Under the new wage system six-grade scales have been established in most branches with a ratio of 1:2 between extreme grades in some branches (machine-building, oil, paper, and other branches of heavy industry), and 1:1.8 in others (the light and food industries).

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The overhauling of the wage system for industrial personnel carried out in accordance with the instructions of the 20th Party Congress has marked the beginning of a new stage in improving the wage system in our country. Primarily it involved a modification of the wage rate system which had not been revised since before the war and which was no longer in harmony with the level of technology. The inadequacy of the wage rate system hindered the application of the principle of the workers' personal interests in the results of their work, and by the same token it hampered the growth of labor productivity.

The changes in the wage rate system have proceeded along the following lines: a substantial rise in wage rates, which brought the share of basic wages in the workers' earnings to 75-85%; a considerable modification in the differentiation of wage rates by branch of production and type of work, depending on working conditions and type of remuneration; the introduction of new wage scales with fewer grades and a narrower gap between the extreme grades; replacement of the multitude of departmental job classification manuals by new, unified manuals applicable to all the enterprises of a given industrial branch; the abolition of the unjustified multiplicity of wage rates and scales which had led to confusion and sometimes to wage-levelling. The changes in the wage system reflect more or less fully the progress of modern technology and the level of production organization, and help, as sho by the results achieved by the overhauling of the wage system, to heighten the material interests the workers in the results of their labor and to raise labor productivity.

Footnote

(1) Karl Marx and Friedrich Engels, *Soch.*, V 4, p. 152.

Biulleten' Nauchnoi Informatsii. Trud i Zarabotn
Plata, 1961, No

I. Kaplan

A QUESTIONNAIRE STUDY OF THE CAUSES OF LABOR TURNOVER IN THE INDUSTRY OF THE ECONOMIC COUNCILS

The number of workers who left industrial enterprises under the economic councils declined by nearly 5% in 1960 as compared with 1957. But in a number of economic administrative areas the number of workers leaving enterprises is still quite considerable.

Thus in 1960 the number of workers who left their jobs in the Azerbaijanian, Karelian and Sverdlovsk economic councils comprised approximately 36% of the average recorded number of workers, and in the Moldavian Economic Council — 60%.

Industry is sustaining large losses as a result of the shifting of workers from one enterprise to another because the workers involved do not take part in social production for a time. Moreover many workers do not fulfill the output quota at the new place of employment for a certain period.

As a rule about 60% of all the workers who leave their jobs quit of their own accord. However statistical reports do not reveal the concrete motives for their quitting. Yet without knowledge of the concrete reasons which lead workers to leave their jobs it is impossible to work out effective measures for reducing labor turnover.

In this connection the Labor Institute in the autumn of 1958 and the summer of 1960 conducte a mass poll in 20 economic administrative areas the country of workers who left their jobs and ne hired workers.

Other participants in the survey were the Bud tary Statistics Department of the USSR Central S tistical Administration, the Institute of Economi and the Organization of Industrial Production of Siberian Division of the USSR Academy of Scien the Urals State University, the Labor Resources Sector of the Council for the Study of Productive Resources of the State Economic Council, the E nomic Research Department of the Urals Branc the USSR Academy of Sciences, the Institute of E nomics of the Azerbaijanian Academy of Science and other scientific organizations.

The survey covered 550 enterprises of the ma chine-building, ferrous metals, non-ferrous met chemical, coal, oil, timber, light and other bran of industry employing 910,000 workers, or more than 7% of the total personnel in industries unde the jurisdiction of the economic councils.

Altogether 64,000 questionnaires were filled

lants, factories, mines and construction sites;
made it possible to learn the concrete reasons
workers left their jobs, and also to obtain data
ne age, labor service and trades of those polled,
vell as comparative data on their working condi-
s and wages at the previous and new places of
loyment. The Budgetary Statistics Department
ne USSR Central Statistical Administration ques-
ed about 2,500 second and third members of
ilies of working people who changed their jobs in
3 and 1959.

far materials have been processed for 232
rprises in the Azerbaijan, Arkhangelsk, Vologda,
elian, Komi ASSR, Lugansk, Moscow Region,
rdlovsk, Stalinsk and Perm economic councils.
y show that most of the workers who shifted from
enterprise to another are young people between
nd 30 years of age. On the average their labor
vice does not exceed 3 to 3.5 years. About one-
d of those who quit gave as their chief reason for
ing that they were moving to the place of resi-
ce of their relatives; nearly 12% of the workers
because they were not satisfied with their wages; 8% gave inadequacy or the absence of living quarters as their reason for leaving.

These reasons predominate everywhere, although their proportion is not the same in different economic councils. Thus 29% of the miners who quit in the Komi Economic Council did so to join their relatives, while in the Stalinsk economic administrative area 19% of the miners left for this reason.

In the Stalinsk Economic Council 16% of the miners who quit did so because they were dissatisfied with their wages, while in the Vorkuta Coal Combine of the Komi ASSR this group was smaller by 2 times.

The distribution of workers who left enterprises of their own accord is given in Table 1.

The survey materials show that the variation in the proportions of those who left to join relatives in the given economic councils is explained chiefly by the unequal scale of labor recruitment from other areas of the country.

In the Moscow Region and Sverdlovsk economic councils more than half of those who left had worked formerly at enterprises of these same economic

Table 1

Distribution of Workers Who Left of Their Own Accord
(% of total)

Reason for leaving	Economic Councils						
	Moscow Region	Lugansk	Sverdlovsk	Perm	Vologda	Arkhangelsk	Komi ASSR
oved to join relatives	8.7	32.6	17.4	23.4	26.3	22.9	29.4
issatisfied with wages	13.0	13.3	11.9	10.5	8.1	27.5	7.8
adequacy or absence of living quarters	8.3	6.8	7.8	5.4	5.5	18.3	4.1
issatisfied with trade	12.4	4.8	7.6	6.6	6.8	2.8	2.2
issatisfied with working conditions	8.9	4.0	3.6	4.1	5.5	2.8	2.1
ong distance from place of work to residence	4.7	2.6	3.4	8.0	3.4	0.9	2.2
o work in specialty	5.8	2.1	3.4	2.4	0.8	4.6	4.3
o nursery or kindergarten, or no accommodations in them	7.3	1.1	1.8	1.0	3.8	4.6	0.2
issatisfied with climatic conditions	—	1.5	1.0	1.7	0.8	—	10.0
o study	5.8	2.6	11.8	7.3	9.7	8.8	6.9
arriage, to get married, birth of a child	5.4	2.9	3.3	1.2	5.5	6.8	3.1
ther reasons	19.7	25.7	27.0	28.4	23.8	—	27.7

administrative area and only 12 to 13% had come from other regions. In the Komi Economic Council workers who had come from other areas of the USSR comprised 46% of all who quit.

In all of the economic councils the total number who quit is determined in the main by the branch structure of industry in the economic area, while the distribution of those who quit in terms of this or that concrete reason depends on the working and living conditions at each individual enterprise.

Thus at the coal mines of the Buryat, Tashkent, Krasnoyarsk, Kirghiz, Magadan, Perm, Kemerovo and Tajik economic councils the total number who quit was the same in 1959. With relatively equal geological conditions for mining and approximately the same labor consumption in coal mining, the total number of workers leaving is the same in the Amir, Bashkir, Irkutsk, Tula, Stanislav and South Kazakhstan economic administrative areas although they differ sharply in their natural and climatic conditions.

At the same time there are sharp fluctuations in the number of miners who leave mines nearly contiguous in location for concrete reasons (for example, pits of the Lvov and Lugansk economic councils). This is also true of enterprises of other branches of industry.

For example, in the machine-building industry the number of workers who leave to join relatives is greatest at enterprises of the Lugansk and Perm economic councils and is smallest in the Moscow Region Economic Council.

Unsatisfactory working conditions were the reason given by 9% of all who quit in the machine-building enterprises of the Moscow Region Economic Cou cil and 12.5% in the Stalinsk Economic Council. those who quit in the Moscow Region Economic Council, 1.5% gave as their reason the unsatisfa tory organization of production and the low level technical guidance by shop superintendents, fore men and heads of production teams; while in the Sverdlovsk and Stalinsk economic councils nearl 5% of all those who quit did so for this reason.

When filling out the questionnaire most of thos who had quit and were again employed indicated only the location of the enterprise where they ha previously worked but also the branch of the eco omy in which they had been employed. This mad it possible to establish the scale and direction o labor migration flows both from a territorial an branch point of view.

The following table presents generalized data the distribution of workers who had left jobs in l or other branches of industry and workers who h never worked before.

It is apparent from this table that the largest number of workers who had left other branches a to be found in the chemical and ferrous metals i dustries. In the coal industry in all of the surve economic councils the number who had previousl worked in the mines reaches, on the average, 35

The branches of the national economy from wh the industrial enterprises of the surveyed econo councils replenished their labor force are given Table 3.

Table 3 shows that in most of the surveyed ec nomic administrative areas more than 50% of th workers went from one industrial enterprise to

Table 2

Distribution of Workers Who had Quit According to Branch of Industry Where Formerly Employed
(% of total)*

	Worked in another branch	Worked in the same branch	Did not work before
Chemical industry	64	10	26
Ferrous metals industry	55	12	33
Timber and woodworking industry	50	22	28
Coal industry	43	35	22
Light industry	41	17	42
Machine-building industry	40	25	35

* Data for 8 economic councils surveyed in the summer of 1960.

Table 3

Sources of Replenishment of Manpower of the Industrial Enterprises Under the Surveyed Economic Councils*
(% of total)

	Economic Councils											
	Moscow Region	Lugansk	Stalinsk	Sverdlovsk	Chelyabinsk	Perm	Vologda	Arkhangelsk	Komi ASSR	Kharkov	Karelian	Azerbaijan
Came from:												
Industry	56.8	59.9	60.6	50.2	43.4	54.2	56.9	47.6	37.2	38.1	41.6	63.7
Construction	7.9	10.1	12.5	15.5	12.6	12.9	2.4	4.9	13.4	7.1	14.4	16.7
Agriculture	5.5	6.5	5.5	4.5	7.3	3.3	9.8	11.0	7.4	2.4	9.1	2.0
Transport	3.9	3.5	5.3	4.2	10.1	8.5	4.1	4.9	4.8	3.0	4.2	4.9
Communications	—	0.1	—	0.8	0.9	0.7	—	3.7	0.5	0.3	0.9	1.2
Trade and public catering	3.0	2.0	1.9	3.9	2.4	6.7	4.9	1.2	5.7	1.4	4.2	1.6
Housing and communal economy	0.2	0.6	0.4	0.5	0.9	0.4	—	—	1.0	—	0.2	2.5
Education	0.5	2.6	1.0	2.1	0.9	1.9	2.4	—	1.1	1.4	2.0	—
Domestic service, the Soviet Army, from school after graduation, etc.	22.2	14.7	12.8	18.3	21.5	11.4	19.5	26.7	28.9	46.3	23.4	7.4

* According to questionnaire data from workers who had left previous jobs.

another industrial enterprise. The proportion of persons employed in industry for the first time or who did not work in production for a long time averages 20%, while the number of those who came to industrial enterprises from all other branches of material production and the non-productive sector ranges from 25 to 30%.

This means that actually there is a great shifting of personnel within industry. In economic councils where one or another branch of production predominates the shifts occur to a significant degree within this branch. For example, in the Moscow Region Economic Council, in which machine-building predominates, almost 50% of the workers who had quit had previously worked at machine-building and metal-working enterprises. In the Lugansk, Stalinsk and Komi economic councils miners who had previously worked in mining enterprises make up a like proportion.

It should be noted that, despite the large-scale migration within branches, on the average about 45% of the persons who move from one enterprise to another change their specialty or job. As a result there are excessive outlays on the training and retraining of personnel.

In filling out the questionnaires the persons who had quit and were again employed indicated the number of days they were idle from the moment they left their previous job until they began work at the s veyed enterprise, and also the time it took them master the new job. This made it possible to as certain the losses of working time resulting fro the interruptions in employment and from the fail to fulfill the output quota on the new job.

Table 4

Loss of Working Time from Labor Turnover in Industry Under the Economic Councils (in days)

Economic Council	Per instance of turnover	
	According to questionnaires of newly hired workers	According to questionnaires of workers who left
Moscow Region	14.6	22.8
Lugansk	27.1	27.2
Stalinsk	33.1	31.7
Sverdlovsk	32.2	36.2
Chelyabinsk	39.6	36.5
Perm	27.1	22.9
Vologda	25.3	32.4
Arkhangelsk	19.8	21.8
Komi ASSR	33.1	38.6
Kharkov	26.8	42.9
Karelian	17.3	21.4
Azerbaijan	41.7	36.0

The duration of the interruptions as a whole f the surveyed economic councils,calculated per i stance of turnover, is given in Table 4.

It is clear from the data in Table 4 that the smallest loss of working time per instance of tu over was registered at enterprises of the Mosco Region and Karelian economic councils. The longest interruptions in the shifting of workers tween enterprises occurred in the Azerbaijanian and Chelyabinsk economic administrative areas.

The data also show that the duration of the int ruptions in employment during the changing of j is almost the same. This attests to the stability this index for the last two or three years.

The materials of the questionnaire provided t basis for establishing the time needed by the wo to master the output quotas at the new place of e ployment. Calculations show that it ranges from 2 to 5 months. During this period the newly-employed workers on the average fail to produce from 3 to 4% of their annual output.

On the basis of these data, and also the indice of the duration of the interruptions in employme and the outlays on the retraining of workers, the total losses from labor turnover in Soviet indust as a whole, for separate branches and for economic councils were determined according to th following formula:

$$P = \frac{VD\,(K_1 + 2K_2 + 3K_3 + \dots + MK_m)}{R} + N_1 + N$$

where V is the annual output per worker, in rub

D is the loss of working time from interruption of employment, in man-days;

K_1 is the number of workers who change jobs once in the course of the year;

K_2 is the number of workers who change jobs twice during the year:

K_3 is the number of workers who change their jobs three times during the year;

R is the total annual working time, in da

N_1 is the volume of output not produced i the course of the year as a result of the non-fulfillment of output quotas at the new place of e ployment, in rubles;

N_2 is the outlays on training and retraini workers who changed their trade or specialty, i rubles.

The calculations made by the Labor Institute ved that the losses from labor turnover in indus- under the jurisdiction of the economic councils unted to 18.6 billion rubles (in old prices) in and to more than 20 billion rubles in 1959.

ne losses for some of the major branches of in- ry are as follows (see Table 5).

osses as a result of labor turnover are produc- losses. Their reduction will make it possible to increase industrial output considerably.

Proposals for reducing labor turnover should be elaborated as applicable to specific economic councils and within the economic councils — to branches of industry and separate enterprises. For this it is necessary to make selective surveys of labor turnover at each industrial enterprise at least once a year.

Table 5

Losses in Certain Branches of Industry of the USSR in 1959 as a Result of Labor Turnover
(in million rubles)

Industry	Total losses	Including: Losses from interruption in employment while shifting from one enterprise to another	Losses from nonfulfillment of output quotas at new place of employment	Excessive outlays on training and retraining of workers who have changed their trades
achine-building and metal-working	3,507	2,785	713	9
oal	1,378	1,137	235	6
l	2,576	2,214	360	2.5
errous metals	819	687	131	1
ght Industry	3,266	2,745	517	4.5
ood	3,078	2,304	771	3

Biulleten' Nauchnoi Informatsii. Trud i Zarabotnaia
Plata, 1961, No. 3

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harapova

NGES IN THE TRADE AND SKILL COMPOSITION OF CONSTRUCTION WORKERS

ne trade composition of construction workers is ging radically with the mechanization of con- ction processes and the introduction of large s and structures in construction: some old es are disappearing and new ones are coming in- eing; the relative importance of some trades is easing considerably while that of others is eably decreasing.

Data published by the Central Statistical Administration of the USSR Council of Ministers indicate that in the twenty years from 1939 to 1959 the number of construction workers doubled, while the number of operators and motor mechanics of building and road-building machines increased 70 times and that of excavator operators 14 times; in the same period the number of laborers decreased by 50%

and the number of workers in such a trade as stove-setter also declined. (1)

Changes in the trade pattern are accompanied by changes in the skill composition of construction workers.

Changes in the skill composition of construction workers can be seen in the changes occurring in the trade composition of the workers, in the relation between the number of workers in mechanized and manual labor and in the educational level of workers.

The nature of the changes in the trade composition of construction workers over a long period can be traced by comparing the reports for 1929 and 1959 submitted, respectively, by Mosstroi [Moscow Construction Administration] and Glavmosstroi [Moscow Chief Construction Administration]. The relative importance of various trades among Moscow construction workers changed as follows (see Table 1):

Table 1

Trades	1929 %	1959 %
Total	100.0	100.0
Old trades		
Laborers	8.6	0.9
Carpenters and joiners	19.6	9.4
Painters and plasterers	16.4	15.0
Transport and auxiliary workers	24.0	8.3
New trades resulting from the changed technical basis of construction		
Machine operators	—	8.0
Welders	—	1.6
Assemblers of different specialties	—	7.6
Crane riggers	—	2.0

The above data indicate that in the 30-year period the proportion of unskilled workers of the old professions — laborers, transport and auxiliary workers — declined considerably in the composition of Moscow building workers; the proportion of carpenters and joiners decreased by 50% and the proportion of painters and plasterers became somewhat smaller. Trades appeared which had not previously existed in construction: machine operators, welders, assemblers.

Considerable changes in the composition of workers can be observed even for such a relativ short period of time as five years.

Between 1954 and 1959 the composition of work employed by Glavmosstroi changed as follows (%

Table 2

Trades	1954	195
Total	100.0	100.
Building-machine operators	4.0	8.
Electric and gas welders	1.0	1.
Concrete worker-assemblers	0.2	4.
Fitter-assemblers	0.1	0.
Crane riggers	1.7	2.
Common laborers working with machines	3.2	3.
Other common laborers	21.6	8.
Laborers	3.7	0.

A comparison of the data for the five-year per shows an increase in the relative importance of trades which owe their origin to the changed tec nical basis of construction.

The extensive application in construction of assembling processes and the replacement of brick-laying by large block and panel constructi leads to a reduction in the proportion of brickla and the appearance of a new trade — assembler.

The changed skill level of construction worke is graphically evident from a comparison of the average ratings of workers of the old trades wit those of workers of the new ones which have emerged in connection with the mechanization a industrialization of construction.

Thus in the Glavmosstroi system in 1958, wit the seven-rate scale operating, the average rati of bricklayers in 1958 was 4.23 and that of asse blers — 4.75. The average rating of fitters of various specialties in the same system amounte to 5.21. Fitters of formerly existing specialtie had the following average ratings: sanitation te nicians — 4.95, pipe-layers — 4.96, whereas t average ratings of fitters of new specialties we assemblers — 5.35, current-repair fitters — 5. building-machinery repair fitters — 5.65. In Glavleningradstroi [Chief Construction Adminis tration of Leningrad] in 1960 the average rating fitter-sanitary technicians was 4.88; for fitters new specialties the average ratings were as fol lows: assemblers — 5.21, current-repair fitte — 5.79, building-machinery repair fitters — 5.

is data testifies to the fact that the new spe- ies require more highly skilled workers. An ogous situation obtains in loading and unloading ations: the average ratings of transport ers in Glavmosstroi was 3.08 and that of rig- — 4.26; in Glavleningradstroi the average g of transport workers was 3.06 and that of ers — 4.15.

e old trades underwent substantial changes in ection with the mechanization of production esses. The painters, plasterers, steel erectors, enters and joiners have now learned to use both -operated and mechanized instruments — pumps pplying plaster solutions, armature benders and r simple machines. These changes are re- ed in the job classification manual.

oad application of electric and gas welding re- s in an increase in the number and proportion of ed workers in construction. In 1959 electric gas welders constituted 1.6% of the total labor e in Glavmosstroi, and 1.7% of the total number orkers employed in Glavleningradstroi in 1960. e existing seven-rate scale welding operations usually rated no lower than the fifth rate. The age rating of electric and gas welders in Glav- stroi in 1958 was 5.9 and in Glavliningradstroi 60 — 5.7.

1958 the average rating of all workers em- ed in Glavmosstroi was 4.6. If we assume con- nally that in 1929 the average skill in every e was the same as in 1958, then the average g of construction workers employed in stroi in 1929 would amount to 4.1. Considering under the existing seven-rate scale rates I and e practically unused and the bulk of workers of the total) are given ratings III to V, an 0.5 ease in the average rating must be considered nificant one.

Economic studies devoted to the growth of workers' skills and their cultural and technical level cite data on changes in the proportion of workers in various rate categories for different periods to prove that workers' skills have risen. (2) However these indices cannot fully reflect the rising skills of workers since, given the differing wage scales operating in different periods, the complexity of different operations and the skills of workers were evaluated differently; conclusions on skill changes based on this data cannot be adequately substantiated.

From the October Revolution to 1928 there existed a uniform 17-rate scale which embraced all apprentices, workers, office employees and administrative-technical personnel: the ratings of construction workers ranged between the ratings III and IX.

Since 1928 a separate wage scale has existed for building workers, whose pattern in individual periods was as follows (see Table 3).

As is evident from the data, the skill level was appraised differently in different periods. Changes in the wage scales result not only from a change in the complexity of operations and the level of the workers' skills, but also from other factors. Thus changes in the wage scale of 1947, as compared with the 1944 scale, occurred in connection with the introduction of bread subsidies over and above wages. As a result of the introduction of bread subsidies in construction, after 1947 there existed 320 wage scales and rates of rating I, because the bread subsidies for different zones and ratings variously changed the ratios in the scales. The above table presents the scale operating in Zone X.

Changes in the wage scales were accompanied by changes in the job classification manual, by which operations of individual trades were raised

Table 3

Years	Wage coefficients according to ratings						
	I	II	III	IV	V	VI	VII
1928	1.0	1.25	1.45	1.60	1.80	2.10	2.50
1934	1.0	1.24	1.55	1.95	2.50	3.20	—
1936	1.0	1.17	1.41	1.74	2.25	3.00	—
1939	1.0	1.17	1.40	1.71	2.15	2.75	3.60
1944	1.0	1.20	1.45	1.75	2.15	2.75	3.60
1947	1.0	1.12	1.26	1.43	1.62	1.97	2.42
1956	1.0	1.18	1.40	1.66	1.97	2.34	2.80
1960	1.0	1.156	1.328	1.525	1.756	2.00	—

to a higher rating not only on the basis of changes in their complexity. For instance, in the 1944 job classification manual many operations formerly classed in rating VI were raised to rating VII in connection with the need to raise the wages of construction workers.

The job classification manual for 1956 partially retained the exaggerations which occurred during the war. Such workers as bricklayers and carpenters were rated in rating VII — their highest rating in 1939 was VI — despite the fact that no significant changes had occurred in the content of their work between 1939 and 1956. The rating of workers according to the six-rate (instead of the seven-rate) scale, carried out in 1960, does not at all mean any decline in workers' skills.

Hence for the period of operation of different scales the data on changes in workers' skills based on the proportion of workers in different ratings are not sufficiently reliable. This makes it necessary to draw on other indices which more correctly reflect the changes in the skills of construction workers.

One index of an increase in skills in construction is an increase in the number of workers operating machines and a decline in the proportion of workers performing heavy manual labor. The introduction of machines in construction, on the one hand, lightens the worker's labor and, on the other, increases its complexity.

Mechanization in construction primarily affected arduous, unskilled operations — transport and earth-moving.

As manual labor is replaced by mechanized work there of course arises the need to operate machines. The operation of machines in construction is, in most cases, a complex task. Under the seven-rate scale, practically all building-machine operators are rated no lower than rating V. In 1958 the average rating of these workers in Glavmosstroi was 6.54; this included: tower crane operators — 6.38, bulldozer operators — 6.48, excavator operators — 6.68, assistant operators of excavators — 4.75, motor mechanics — 5.32. In 1959 the proportion of operators of various building machines amounted to 8% of Glavmosstroi's total labor force and to 7.2% in Glavleningradstroi.

Operations involving the moving of loads in hand and wheelbarrows, as well as by other non-mechanized methods, were rated no higher than rating III in the seven-rate scale. The digging and filling up of earth by hand also came under rating III. It should be pointed out here that in the seven-rate scale rating III was the lowest for operation of a definite specialty, since in the job classification manual ratings I and II were applied to simple operations having no special characteristics. Mechanization of the most arduous, uncomplicat operations helped reduce the proportion of unski workers — laborers and common laborers — by more than 3 times.

In 1929 32.6% of Mosstroi workers performed earth-moving and auxiliary (mainly transport) operations by hand.

In 1959 the proportion of these categories of workers in Glavmosstroi amounted to 9.2%.

The mechanization process changes the level workers' skills, first by increasing the number highly-skilled machine operators, and second by reducing the proportion of manual laborers with little skill. In general there is a rise in the general average skill level of construction workers

A change in the trade and skill composition is accompanied by a rise in the general education level of workers — workers engaged in new trad connected with the operation and control of machines have a noticeably higher general educatic level, since the exploitation of machines require a certain minimum of theoretical knowledge.

In the past the construction worker could mas only the work methods and skills handed down fr generation to generation, whereas under present conditions a tower crane operator, for example, must not only have the skills involved in operati a crane, he must, as a minimum, understand ele tric systems and be able to make simple technic calculations. Of course the rise in the general education level of workers can not be explained production requirements alone; there is also the general cultural and technical advancement of o people. A higher general education level of worl is a prerequisite of a rise in their skills. The r in the general education level of construction workers over the twenty-year period from 1939 1959 is illustrated by the data of Table 4.

Table 4

Workers with Secondary and Higher Educatio
(per thousand) (3)

	1939	195
Excavator operators	128	494
Operators and motor mechanics of road-building machines	100	408
Laborers	62	331
Bricklayers	29	348
Carpenters	14	238
Plasterers	36	397
Painters	59	411
Stove-setters	24	219

ie Labor Research Institute carried out a
ctive survey of more than 800 workers employed
Ioscow construction organizations. The results
ie survey give an idea of the average educational
l of workers in the basic trades:

Tower crane operators	6.7 grade
Electric welders	6.6 ”
Fitters of all specialties	6.1 ”
Assemblers	5.4 ”
Carpenters and joiners	5.3 ”
Bricklayers	5.2 ”
Plasterers and painters	4.3 ”

ie educational level of Glavleningradstroi
kers engaged in various trades can be judged
i data of a selective survey of more than 2,000
kers at individual construction sites in Lenin-
.

Table 5

Secondary Education In Number of Grades

Trades	Total	Including persons	
		below 30	above 30
Tower crane operators	7.2	7.3	7.0
Operators and assistant operators of excavating machines	6.0	5.8	6.0
Sanitation technicians and fitters	6.2	6.4	5.5
Electricians	6.9	7.0	6.7
Assemblers	6.6	6.8	5.8
Pipelayers	6.3	6.6	5.7
Bricklayers	5.5	5.6	5.2
Plasterers	5.6	5.8	4.4
Painters	6.0	6.6	4.6
Carpenters	5.9	6.3	4.9
Parquet layers	5.5	6.7	5.1

ien the educational level of all workers is
ed relatively less time is
e complex trades. For example, a worker with
ght- or ten-year education can learn to operate
itomatic crane or concrete-mixer in a com-
tively short period of time.

e above-mentioned facts enable us to draw the
lusion that technical progress, the introduction
w types of machines and new production tech-
y are accompanied by a rise in the skills of

construction workers. The educational level of all construction workers is growing markedly, with the workers in new trades having, as a rule, more education.

Changes in the composition of construction workers envisaged for the current Seven-Year Plan period are defined by the long-range development plan for construction.

The 21st Party Congress emphasized the need to continue on the path of the utmost industrialization of construction, the conversion of construction into a mechanized, conveyor process of assembly and erection of buildings and structures from large prefabricated elements and units.

It is planned to eliminate all processes in construction which are performed with the help of hand-operated instruments, to expand mechanization and introduce comprehensive mechanization, and to improve the designs of machines. These measures will ensure a further growth in the number of highly-skilled machine operators and a reduction in the number of unskilled workers performing auxiliary operations. More thorough and expanded mechanization and automation of construction processes will lead to a substantial rise in the relative importance of skilled workers and to a rise in the average skill level of all construction workers.

In planning the number and training of workers in individual trades it is necessary to consider the changes planned for the given trades. For example, plans for the training of building-machine operators must be based on both the need for a substantial increase in the number of workers of this trade and the qualitative changes in the character of labor connected with the introduction of ever more perfected machines.

The rapidly changing technology of construction and the replacement of some construction materials by others require that in the training for any building trade the scope of knowledge acquired by the workers should be broad enough to enable the worker to master new methods in the shortest possible time and without significant outlays for retraining.

At the present time it would seem expedient to fix a definite compulsory level of education for workers of individual building trades.

Footnotes

(1) Vestnik Statistiki, 1960, No. 12, p. 9.

(2) See, for example, F. M. Volkov, Kvalifits vannyi Trud Pri Sotsializme, MGU, 1959; S. V. Kozlova, Pod'em Kul'turno-Tekhnicheskogo Uro nia Rabochego Klassa SSSR, Gospolitizdat, 1959 V. Svetlov, "Tekhnicheskii Progress i Podgotov Stroitelei," Professional'no-Tekhnicheskoe Obra vanie, 1959, No. 8.

(3) Vestnik Statistiki, 1960, No. 12, p. 18.

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Sotsialisticheskii Trud, 1961, N

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ON THE REDISTRIBUTION OF MANPOWER AND ITS ENLISTMENT FOR PERMANENT WORK IN THE NEWLY DEVELOPING AREAS OF THE USSR

The Communist Party and the Soviet Government attach great importance to questions of the rational distribution of manpower among the branches of the national economy and the economic regions of the country. Important qualitative changes have taken place in the structure of manpower during the years of Soviet power. They reflect the process of transformation of our state from an agrarian country into one of the mightiest industrial powers of the world.

The constant and planned development of all regions and republics of our country is one of the most important features of the development of the socialist economy. The growth of industry in the eastern regions of the USSR has led to a considerable growth of their population. Compared with the prewar year of 1939 the total population of the USSR has increased by 9.5%, while the corresponding figures are 24% for Western Siberia, 34% for Eastern Siberia, 53% for Kazakhstan, and 70% for the Far East.

Nevertheless the vast territory of the Soviet Union and its tremendous natural wealth require a further improvement in the distribution of the productive forces. Enormous funds have been allocated to development of the Urals, Siberia, Kazakhstan Central Asia in the current seven-year plan pe As a result, capital investments per capita in t eastern regions will be double the average figu for the country.

The volume of industrial output in Siberia du the seven-year plan period will increase by mo than 175% and the corresponding figures for Ka stan, Kirghizia and Turkmenia are 170%, 120% 100% respectively, while the average increase the USSR as a whole is 80%.

At present most of the regions of Siberia, th East and Kazakhstan are experiencing a labor shortage. The shortage of local manpower for industrial construction requires the transfer o several million people from the densely popula areas of the European part of the USSR to the eastern areas of the country in the course of th seven-year period. In accordance with the dir tives of the Party and the government, new ind trial construction has been prohibited in a num of large cities (Moscow, Leningrad, Gorky, Sv lovsk, Kharkov, Kiev, etc.). That is why in the re the increase of the able-bodied population in e cities will be greater than their additional lirements for manpower.

ne cities and rural districts in the central, ern and southern areas of the European part of JSSR, where for various reasons the additional lirements for workers is declining, now consti- the main reserve of manpower for the eastern northern areas of the country. Thus changes in structure of the fuel industry in the central re- s have led to a reduction in the number of kers employed in coal mines. A reduction in the ber of jobs is also noticeable on the railroads use of the replacement of steam traction by e effective rolling stock. This is also leading to cline in the number of transportation workers loyed in locomotive servicing. Part of the able- ed population, especially the youth, living in ain cities of the European part of the USSR do have large industrial enterprises, will be able to jobs in other regions of the country. Manpower lso being released in connection with the com- ion of the construction of enterprises, hydro- tric stations, etc.

ne inter-regional redistribution of manpower in anned manner is carried out in various forms. most important of these are: the organized re- tment of workers for construction projects, stry and transport; the migration of collective ners, factory and office workers with their fami- to collective and state farms; the distribution oung specialists, graduates of higher educational blishments and specialized secondary schools, vell as young workers who have received training ocational and technical schools.

In connection with the development of fallow and virgin lands and intensive industrial construction in the eastern areas of the country, new forms of the inter-regional redistribution of manpower have appeared in recent years: the voluntary public labor enrollment of the youth; the assignment of specialists and skilled workers to jobs in their chosen trades in accordance with the requests of economic councils; the dispatching of demobilized servicemen to jobs in various areas of the country, etc. The utilization of all these forms made it possible to send hundreds of thousands of working people annually to the eastern regions of the USSR. The share of the different forms of redistribution of manpower can be seen from the following table for 1959-1960.

Thus we see that more than 60% of all the redistributed manpower was channeled to the districts of Siberia. In addition, young specialists, graduates of higher educational establishments and specialized secondary schools, are annually sent to different areas of the USSR through the system of organized recruitment and through migration. Thus in 1959 38 thousand young specialists were sent to the far east.

An evaluation of the effectiveness of the individual forms of redistribution of manpower must be based on the contribution which each of them makes to solving the task of creating permanent cadres of skilled manpower in the eastern and northern regions of the country. At the present stage the form of redistribution involving the organized recruitment of manpower no longer corresponds to the tasks of creating permanent cadres in the east. Under the organized recruitment system workers

	Percentage distribution of able-bodied population sent from the districts of the RSFSR				
		Among them:			
	Total	Organized recruit-ment	Skilled workers on contract with economic councils	Through migration	Demobilized servicemen
To the Urals	10.8	5.5	0.1	1.5	3.7
To Siberia	60.4	35.2	2.4	10.1	12.7
To the Far East	26.7	16.0	0.4	7.1	3.2
To Kazakhstan	2.1	—	2.1	—	—
Total	100.0	56.7	5.0	18.7	19.6

are sent to the various districts for one to three years as a rule, but a considerable part of them return home before the expiration of this period. A major shortcoming of this system can also be seen in the fact that it does not take into consideration the occupational composition of the workers who are sent to the eastern districts.

For the above-mentioned reasons other forms of redistributing manpower are acquiring increasing significance in the newly developing districts, among them the migration of collective farmers and factory and office workers, the voluntary public labor enrollment of youth, the planned dispatching of demobilized servicemen to jobs in various parts of the country, as well as the assignment of specialists and skilled workers to jobs in accordance with the requests of economic councils. The advantage of the latter form of redistributing manpower consists in the fact that it is called upon to satisfy the requirements of enterprises and construction projects for workers in specific trades in which there is a shortage in the respective district. This form embraces workers in all age groups, including the most valuable workers (in terms of skill) in the medium age groups and among the youth.

However at present this new form of redistribution of manpower is not yet being utilized on a large scale. Thus, according to data supplied by the Chief Administration for Migration and Organized Recruitment of the RSFSR Council of Ministers, the requests received from economic councils in the east and north for skilled manpower in 1959 were fulfilled to the extent of only 47%. The following table shows the distribution of skilled workers sent for employment to different areas of the country in 1959:

Regions	Skilled workers sent t different areas of the cou under the inter-regiona redistribution system	
	Number of people	% o tota
North and North-West	388	8
Center	254	5
Volga Area	201	4
Northern Caucasus	41	1
Urals	138	3
Western and Eastern Siberia	1,164	25
Far East	325	7
Kazakhstan	1,710	37
Enterprises of ministries in various regions	464	10
Total	4,685	100

More than 3.3 thousand workers, i.e., over 72 of the total number of redistributed skilled work were sent to the eastern regions. This number cludes: 27% from Tula Region, 22% from Staling

Regions	Number of workers requested	Number of workers sent out to comply with requests	Percentage of required number
North and North-West	727	388	53
Center	2,134	254	12
Volga Area	200	201	100
Northern Caucasus	40	41	102
Urals	262	138	53
Siberia	2,814	1,164	41
Far East	1,134	325	29
Kazakhstan	2,200	1,710	78
Enterprises of ministries in various regions	650	464	71
Total	10,161	4,685	46

on, 15% from Gorky Region, 8% from the city of cow and Moscow Region.

e extent to which the requests for skilled man- er are met can be seen from the data for 1959 n in the table on the bottom of page 54.

analysis of the data on the inter-regional redis- ution of workers shows that skilled manpower the old industrial districts is sent mainly to the s of new economic development. But the scope is redistribution is still insufficient.

e following data show the occupational composi- of workers sent to the eastern and northern s in 1960:

	% of total
ilding trades workers	46
Carpenters	16
tomobile drivers	17
rifters and miners	17
ectricians and electric welders	5
tters	5
her trades	10
Total	100

suring permanent cadres of skilled manpower he new industrial enterprises and construction ects in the regions of intensive economic de- pment requires the broad introduction of new s of inter-regional redistribution of skilled ers. The eastern areas are in need of man- r for the development of agricultural land, st and fishery resources. The planned migra- of collective farmers and state farm workers the central and western areas of the country played an important role in ensuring the eastern icts with manpower. The settlement of the sely populated areas abounding in vast tracts nd by migration from the Ukraine, Byelorussia Central Russia has promoted the development of irgin and fallow lands, the development of subur- agricultural bases around the large cities and truction sites of the country.

e improvement of existing forms of redis- ting manpower is an important prerequisite for ting permanent cadres of skilled workers in the areas. In our opinion it is necessary to im- e the coordination of plans for the redistribu- of manpower through the system of migration organized recruitment with the plans for the ntary public enrollment of the youth. In response to the call of the Komsomol a million-strong army of Komsomol members is going to the new construction projects, industrial enterprises and state farms. To attract skilled manpower for permanent residence in the areas of new economic development it is particularly important to create favorable living conditions in the north and east of the country.

The development of local cadres of skilled factory and office workers as well as engineering-technical personnel in the areas of intensive economic development will make it possible in time to reduce the migration of manpower from the central and western regions of the country. This will undoubtedly reduce labor turnover at the enterprises and construction projects in the eastern districts of the USSR which leads to a considerable loss in working time. Although a considerable part of the workers remains within the borders of the respective economic region their transfer from one enterprise to another creates an artificially high demand for manpower.

Until recently the main incentive in attracting manpower to the new regions was higher pay resulting from regional increments and coefficients. Has this practice been justified? Many years of experience have shown that although higher pay in the eastern regions serves as an incentive for the working people to migrate to the areas of new economic development, it does not have a decisive influence on their settling for permanent residence in these areas.

In this respect the creation of normal living conditions is a much more effective factor in providing these areas with permanent manpower. At at present the average per capita living-space in the eastern regions of the RSFSR is not more than in the central regions of the USSR, and in some places it is even less. For example, in Western Siberia per capita living-space is 10% less than the average for the USSR as a whole; in Eastern Siberia it is 5% less and in Kazakhstan it is 25% less. Such a distribution of housing facilities among the regions does not contribute to the development of permanent cadres in the eastern areas of the country. Why does this occur? Very often the arrival of additional manpower at a number of enterprises and especially construction projects is not coordinated with the possibilities available at the economic councils in the north and east for providing normal living conditions and cultural and household facilities. The main reason, among others, for such a state of affairs is that the rate of housing construction lags behind the requirements for it. These shortcomings are often embodied in the housing construction plans themselves; the commissioning of new houses is not coordinated with the influx of workers from other republics and regions. In the Karaganda Economic Council, for example, the relationship between the commissioning of new housing facilities and the influx of manpower from other parts of the country was as follows:

	Housing facilities as of January 1, 1959		Increase in 1959		Plan for the re-settlement of workers from other republics and regions in 1959 (number of workers
	hostels	beds	hostels	beds	
In the economic council as a whole	639	37,688	216	16,464	62,600

As a result of mistakes made in planning the commissioning of new housing facilities (even considering the fact that some workers leave, thus releasing additional living quarters) the accommodation of the newcomers was not provided for. All this shows the necessity of stepping up housing construction in the Eastern areas of the country so as to fully meet the requirements of the population of these regions for living quarters.

The living standards of the working people in different regions depend to a considerable degree on how these regions are supplied with all the necessary foodstuffs and manufactured goods.

However the per capita commodity circulation of the state and cooperative trade organizations in most of the eastern regions is still below that in the central regions of the European part of the USSR.

Regions	Retail commodity circulation of state and cooperative trade in 1959 (in %)
Center	100
Western Siberia	66
Eastern Siberia	76
Far East	107
Kazakhstan	65

Note: It should be noted that the average wages of factory and office workers in the Far East, as well as the prices of certain foodstuffs, are somewhat higher than in the Center and Siberia in accordance with the division into zones.

This table shows that provisions for the worki
people in the eastern regions through the state a
cooperative trade network lag considerably behi
those in the central regions. The regions of nev
economic development are particularly short of
consumer goods as well as agricultural product

As a result, the working people coming to the
eastern regions for temporary work or residen
find themselves in worse conditions than in the
center (especially those newcomers who have n
yet had time to develop individual truck gardens

In addition, public catering in these regions i
rather poorly developed so that the local popula
tion must devote much time to their individual t
gardens. The factory and office workers residi
in the Far East, Siberia and Kazakhstan keep tw
to three times the number of cows and use 50 t
100% more land for their individual truck garde
(per 1,000 factory and office workers) than thes
categories of personnel do in the central region
of the European part of the USSR.

The January (1961) Plenary Meeting of the P
Central Committee summed up the results of th
tremendous work carried out by the Party in th
field of agriculture and discussed the basic que
tions of the further development of this sector.
The Plenary Meeting of the Party Central Com
tee noted that despite the considerable increase
agricultural production, especially because of t
development of virgin and fallow lands in the e
the attained level and rate of growth of agricult
production is still insufficient to meet the requ
ments of the population. This is particularly t
in the eastern and northern regions, where the
a higher natural rate of increase of the populat
and a constant influx of new factory and office
workers.

The considerable role played by individual t
gardens in the life of the population in the East
regions is one of the main causes of the irratic
utilization of existing manpower. In the far ea

ia and Kazakhstan the time taken up by house-
work and the cultivation of individual truck
ens is much greater than the average figure for
ountry as a whole. To draw this able-bodied
ation, especially the youth and women, into so-
roduction certain important steps must be
. In this respect the experience of organizing
c catering and developing a network of chil-
s establishments in state farms of the Altai
itory is worthy of attention. The able-bodied
ation residing on these state farms comprises
housand people. Until January 1960 only 155
and persons (44%) out of this number held per-
nt jobs at the state farms and public organiza-
. As a result of the efficient organization of
c catering and important organizational work
ed out by the Party organization of the Altai
itory in 1960 more than 500 members of fami-
mainly women and young people, took up per-
nt jobs at eight state farms of the Territory.
erly these people had been engaged in house-
work and in cultivating their truck gardens. In
ion, more than 2.4 thousand housewives took
in harvesting work. (1)

e problem of rationally utilizing female labor in
astern regions of the country is of prime sig-
nce now. The initiative of the Uzbek women
ndertook to master the operation of compli-
machinery shows that Soviet women, who have
ved full economic and political equality with
can play a revolutionary role in the building of
mmunist society.

ensure a better utilization of local manpower
f seasonal workers who come to the virgin
to render assistance, it is also necessary to
e enterprises for the processing of agricultural
aterials and other seasonal auxiliary enter-
s in these regions. "It is even profitable to set
asonal production enterprises on the new lands,"
Nikita S. Khrushchev. "These enterprises can
osed down during the harvesting season and the
ers can be sent to the state farms and collec-
arms. This is more expedient than to engage
rvesting work people who are unfit for agricul-
labor." (2)

At present there is a serious lag in the Eastern districts in the development of auxiliary and service branches of the economy.

The level of development of light industry in various areas of the country can be seen from the following table showing the per capita production of certain consumer goods in 1959. (3)

The data cited in this table show the shortcomings in the territorial organization of production. Their elimination calls for improving the planning of the distribution of the productive forces, for ensuring the correct specialization and comprehensive development of the various regions.

The comprehensive economic development of the Eastern regions will contribute to the rational utilization of local manpower, the proper employment of newly arrived manpower in social production, the building up of a local food base and the production of consumer goods, as well as the expansion of the network of cultural and communal service establishments.

Considering the progress of technology, we must expand in the very near future the training of new workers in the north and east through the system of vocational and technical schools and other channels. The labor departments of the economic councils must pay special attention to working out practical measures for raising the skills of workers directly at the enterprises and at a faster rate; they must also raise the level of technical equipment of labor and the quantity of electric power per worker in industry and construction with the aim of exceeding the level of the corresponding branches in the RSFSR and USSR.

The ensuring of a balanced complex of economic and cultural facilities, including such matters as the training and retraining of personnel, as well as the introduction of the latest methods of exploiting the more economical natural resources of the eastern regions and the application of advanced methods of labor organization, will greatly increase the economic effectiveness of capital investments and the utilization of new manpower, and will recoup in a comparatively short period of time the funds invested and the labor expended. The

	Center	Western Siberia	Eastern Siberia	Far East	Kazakhstan
Fabrics of all types (meters)	261.7	8.8	12.5	1.6	2.5
Knitted garments (units)	4.6	1.1	0.8	0.2	1.4
Stock and stockings (pairs)	9.3	0.9	0.03	—	2.4
Leather footwear (pairs)	2.8	1.1	0.9	0.2	1.1

creation of permanent cadres of manpower for the various branches of the national economy in the newly developing regions is one of the main factors in the steady growth of social production on the road to the comprehensive building of communism.

***

Footnotes

(1) Pravda, November 30, 1960.
(2) Pravda, January 21, 1960.
(3) The table is compiled from data taken fro Narodnoe Khoziaistvo SSSR v 1959 g. and Naroc Khoziaistvo RSFSR v 1959 g.

National Income Analysis

Planovoe Khoziaistvo, 1961, N

B. Plyshevskii

THE RELATIONSHIP BETWEEN THE RATES OF GROWTH OF THE AGGREGATE SOCIAL PRODUCT AND NATIONAL INCOME

The relationship between the growth rates of the social product and the national income is part of the problem of the effectiveness of social production, and therefore its solution is connected with the economic evaluation of the results of technical progress, the growth of labor productivity and their effect on the structure of the social product.

In essence the question is whether the outlays of labor and material resources per unit of product grow or decline in the process of economic development whether labor productivity rises or falls and the sources of expanded reproduction relatively increase or shrink. An answer to these questions is very important for the theory and practice of national economic planning, which is called upon to ensure high rates of economic growth on the basis of the comprehensive and efficient use of all of the resources of the economy.

Until recently it was recognized in Soviet economic literature that the growth rates of the physical volume of the national income run ahead of the growth rates of the aggregate social product. The degree of this outstripping has been uneven at different stages in the development of the national economy and in separate branches, but on the w the net output increased faster than the gross c put. According to data of the USSR Central Sta tical Administration, between 1928 and 1957 th aggregate social product rose 15 times and the tional income — 17 times. This law, confirme statistics over a long period, has been, and is, into account in drawing up the current and long range state economic development plans.

But recently the thesis on the faster growth of the national income as compared with the ag gate social product has been challenged in the of A. I. Pashkov and Ia. A. Kronrod. (1) In th opinion higher growth rates of the social produ are more characteristic of expanded reproduct In view of this Kronrod doubts the reliability o materials published by statistical agencies, referring to the incorrect methodology used in culating a number of indices.

Thus there are now two different approache economic literature in assessing the effect of nical progress and the growth of labor product on the structure of the social product and the governing its changes.

he present article, which does not lay claim to
haustive solution of this intricate problem, an
pt is made to examine the principal conditions
actors which determine the relationship be-
the growth rates of the aggregate social prod-
nd national income and their effect on the dy-
cs of the respective indices.

nong these factors are, first of all, an increase
number of workers in material production
he time worked by them, and a rise in the pro-
vity of social labor, with the latter being of
ive importance for the development of the na-
economy because it accounts for an ever in-
sing part of the growth in the social product and
ational income. In the current Seven-Year Plan
d this factor will account for three-fourths of
crease in industrial output, 90% — in rail
ht carriage and for almost the entire growth in
olume of building and assembly work. In agri-
re the growth of labor productivity fully en-
an increase in agricultural production while
umber of persons engaged in it declines.

wth of labor productivity and a rise in the
er of workers in material production affect the
ture of social production in different ways. If
umber of workers increases while the tech-
y remains unchanged, the gross and net output,
her conditions being equal, change to an equal
t. It is a distinctive feature of expanded repro-
on, based on higher labor productivity, that the
nics of gross and net output, expressed in
of value and in physical terms, differ.

development of science and technology and
plication of their achievements in the produc-
rocess are the basis for the growth of labor
ctivity. Technical progress brings about an
ase in means of production per worker; capital
erson engaged in industrial production and in
ruction and assembly work in 1959 was 5.9
as large as in 1928 and 4.2 times as large as
40. Labor productivity per worker in industry
in 1959 8.8 times as compared with 1928 and
mes as compared with 1940; in construction it
6.5 and 2.6 times respectively.

increase in labor productivity means an abso-
ecrease in the outlay of both living and past
per unit of product. "The increase in labor
ctivity consists precisely in the fact that the
of living labor is reduced, while that of past
is increased, but in such a way that the total
ity of labor incorporated in that commodity de-
." (2)

ending on the trend of technical progress and
fectiveness of various types of machines, the
s of living and past labor change in different
es, but in all cases the share of past labor in
the value of a unit of the product increases, while the share of living labor declines; the value structure of the social product changes accordingly; the share of the newly created value drops, while the share of the transferred value of the consumed means of production rises.

The value of output is expressed not directly but indirectly — through prices. Prices reflect the conditions of creation of value, its realization and distribution. In view of this, prices of products, as a rule, do not coincide with their value. A change in labor productivity directly affects the magnitude of value and, only ultimately, the level of existing prices. A rise of labor productivity influences directly not the level of the price but its structure, the share of the cost of production declines and the share of net income rises. The level of prices, moreover, depends on the purchasing power of money. These features of the money form of value bring about a non-coincidence of the share of the national income in the social product calculated in operating prices and in terms of value.

Share of the National Income in the Aggregate Social Product
(in current prices)

1928	1940	1950	1955
46.4	57.0	54.0	50.0

The rise in the share of the national income in the social product in the pre-war period is explained by the different dynamics of the prices and value of output: value, owing to a growth of labor productivity, was declining, while prices, under the influence of the changes in the structure of the national economy and the purchasing power of money, rose, with the index of retail prices rising to a greater extent than the index of wholesale prices for means of production. In the postwar years the price and value structure of the social product has been changing in the same direction. The share of the national income in the social product dropped from 57% in 1940 to 50% in 1955.

Now let us see how the growth of labor productivity affects the dynamics of the physical volume of the social product and the national income. The rise in labor productivity is based on technical progress, the material prerequisites for which are created in the branches of Department I. Inasmuch as in the process of expanded reproduction the share of means of production rises in the composition of the social product, at times the conclusion is drawn that the social product increases at a faster rate than the national income, that is, there is an increase in the rate of material outlays per unit of output.

In our opinion the priority development of branches in Department I does not run counter to the thesis on the higher growth rates of the national income as compared with the social product. With the development of technology, the mass of means of production functioning in production increases. At the same time their effectiveness rises and the output per unit of equipment grows, as a result of which the consumption of fixed capital per unit of output decreases. As technology develops the difference between the volume of employed and consumed means of production rises. This feature of reproduction in conditions of technical progress was already pointed out by Marx. "With the increase of capital, the difference between the capital employed and the capital consumed increases. In other words, there is an increase in the value and the material mass of the instruments of labor.... which, in the course of a more or less extended period, function in constantly repeated processes of production, that is, serve for the attainment of a definite useful effect, in its full extent, while they gradually wear out." (3)

Technical progress changes the relationship between the output of Department I, used for the replacement of the consumed means of production, and for the formation of the accumulation fund. A certain idea of these structural changes is afforded by the following figures. The physical volume of the replacement fund in 1957 increased approximately 13.4 times in 1957 as compared with 1928, while the accumulation fund rose 20 times.

An increase in the mass of means of production employed in production in connection with the growth in capital per worker does not at all signify an increase in the material outlays on the production of a unit of output, since in these conditions the gap between the volume of functioning fixed capital and those consumed annually grows bigger, on the one hand, and favorable conditions are created for savings on elements of the circulating capital, on the other. Priority growth in the output of means of production can be effected without a change in the rate of material outlays in output and with a cut in the expenditure of means of production in the process of production. The condition necessary for this is a rise in the share of the accumulation fund in the social product and national income, with the degree of this growth being greater than the saving in material outlays.

It should be noted that a rise in the share of the
accumulation fund is one of the chief peculiariti
in the development of the Soviet economy. The
share of the accumulation fund in the national i
come, calculated in current prices, rose from
15.9% in 1925-26 to 21.3% in 1928; it amounted
26.9% in 1932, 26.4% in 1937 and 28.8% in 1940.
1950, 27% of the national income went for accu
lation and in 1951-1958 — about 25%.

The growth of the accumulation fund is the
source of expanded reproduction, technical prog
and a rise of labor productivity in all branches
the national economy. The increase in labor pr
ductivity is manifested specifically in a decline
the material outlays for the production of goods

The rise of labor productivity achieved throu
the development of technology does not affect
equally the various elements of material outlay
Growth of the capital per worker and the increa
in the mass of employed productive capital bri
about greater consumption of them in the proce
of production. But at the same time there aris
the effectiveness of the productive capital and t
coefficients of their use, as a result of which o
put expands faster than the fixed capital. The
physical volume of the social product increase
proximately 18 times between 1928 and 1959, w
fixed productive capital grew 7.3 times. In sep
rate branches of the economy at definite stages
development of technology may lead to an incre
in the absolute amount of amortization per unit
output. But in most branches output expands f
than the volume of productive capital. This m
that amortization of fixed capital, calculated p
unit of output, decreases, notwithstanding the f
that its share in material outlays increases.

Consumption of electric power per unit of in
trial and agricultural output rises absolutely i
connection with the increase in the electric po
per worker. Between 1928 and 1958 the growt
consumption of electric power per unit of outp
industry was 1.7 times greater than the increa
in the volume of industrial production. In agri
ture this figure is even higher. Greater consu
tion of electricity is a very important factor i
raising labor productivity and savings on othe
ments of means of production — fuel, power, r
and other materials.

Improvement of machinery and the technolo
production reduces the norms of expenditure o
circulating productive capital per unit of outp
For example, in 1955 the expenditure of iron c
per ton of cast iron for steel production was c
2% as compared with 1940, manganese ore —
32%, coke—by 15%. The expenditure of metal i
charge per ton of open-hearth steel declined b
the consumption of conventional fuel per

vatt-hour of electricity dropped by 20%. The
nditure of metal in machine-building was also
ced considerably. The output of rolled ferrous
ıls in 1959 increased 3.6 times as compared
1940, while the output of the machine-building
metal-working industries grew 7.9 times.

re has been a rise in the yield of fiber from raw
on, sugar from processed beets, etc.

big saving in the expenditure of circulating pro-
ive capital has been achieved through the use of
types of raw and other materials. The chemical
stry is in the front rank in this respect. The
umption of chemical products per unit of the so-
product in 1957 was more than five times
ter than in 1928.

nprovement of machinery and the technology of
uction leads to a decline in material outlays per
of output. Sh. Ia. Turetsky estimates that the
of consumption of material resources in indus-
n the Soviet period dropped by 40 to 50% as
pared with the pre-revolutionary period. In 1959
naterial outlays per unit of the social product,
is, the size of the replacement fund in relation
e entire volume of the social product, declined
oout 13% as compared with 1928. What is more,
share of means of production representing tech-
l progress — machinery and equipment, electric
er, chemical products, etc. — increased in the
acement fund. While the general magnitude of
naterial outlays dropped, consumption of the
e economical means of production per unit of
ut increased in absolute terms.

ne of the main factors making for a saving of
erial outlays is the branch structure of the na-
l economy. The changes in it stipulated in the
n-Year Plan will raise in the output of Depart-
I the share of the more economical means of
uction. The radical reconstruction of the fuel
nce by increasing the share of the more eco-
ical fuels — oil and gas, the accelerated de-
pment of the chemical and electric power indus-
, the replacement of steam locomotives by
el locomotives in rail transport, the use of new
ding materials, the tapping of the very rich and
ntageous raw, fuel and power resources in the
ern areas of the Soviet Union — all this leads to
ving of the material resources of society and a
ction of their expenditure per unit of output.

vings of material outlays are realized on dif-
nt scales in different branches of the economy.
erial outlays are cut more swiftly in branches
high rates of technical progress — in industry,
truction and transport. This process is more
lved and slower in agriculture. In recent years
growth in the net output of agriculture lagged
nd the increase of gross output. Between 1954
and 1958 the average annual rate of increment in net output of agriculture was 87% of the average annual rate of increase of gross output. This is explained by the fact that the economic effect of large capital investments in agriculture has not been fully registered as yet. The growth rates of agricultural output are also greatly influenced by natural and climatic conditions. In high-yield years the rate of growth of net output exceeds the rate of growth of gross output. But in some years, owing to unfavorable weather conditions, material outlays per unit of output might rise.

Material outlays comprise the main part of production costs. In the cost of production of industrial output in 1959 they amounted to 77.5% in the items in which material outlays are directly specified and to not less than 80% in other items in which they are not singled out. The share of material outlays in the cost of construction and assembly work amounted to 62% in 1959. Therefore production costs are reduced chiefly through a saving on material outlays. A saving on the means of production makes it possible to produce more output with the same equipment and the same resources of fuel, raw and other materials.

The national economy has large possibilities for saving material resources and labor. In the first two years of the Seven-Year Plan industrial output rose by 22.1% as against 17% called for by the Plan. As a result additional output worth 11.3 billion rubles (in the new scale of prices) was produced. The Soviet Union's national economy is developed through internal sources of accumulation. It is the principal task of planning agencies at the center and periphery to work out practical measures for the improved use of fixed capital, more rational and cheaper use of metals, fuel and power, more accelerated and less expensive construction and higher effectiveness of capital investments. The more effectively material and labor resources are used, the higher the rates of growth of social production and the advances in the material and cultural level of the population.

Thus the effect of a rise in labor productivity on the value and material structure of the social product differs: as labor productivity grows, the share of the national income in the social product declines when calculated in current prices, and, on the contrary, increases when output is calculated in comparable prices. This is associated with the dual nature of labor in the conditions of a commodity economy.

This question is regarded differently by Ia. A. Kronrod. In his opinion the structure of the aggregate social product, expressed in physical terms and in value terms, changes in one direction: the share of the replacement fund rises and the share of the national income declines. "If the share of the replacement fund rises in value, it necessarily rises in physical volume as well." (4) The saving in material outlays is treated by Kronrod as a factor resisting a decline in the share of the national income in the social product. But, in his opinion, the growth of the social product proceeds at a faster pace than that of the national income.

The dynamics of the physical volume of the aggregate social product and the national income is determined in planning and statistical work by the direct evaluation of the gross output and material outlays in unchanging prices, taking into account the reduction of the norms of their expenditure in the process of production. Kronrod holds that this is incorrect because in such a case account is taken only of the saving in material outlays and no attention is paid to the saving in living labor. The crux of his proposal is that the dynamics of the physical volume of the replacement fund and the national income be determined in conformity with the change in their share in the social product calculated in current prices. Let us explain this by the following example.

The dynamics of the social product and the national income in terms of money and in physical volume in the Fifth Five-Year Plan is characterized by the following figures:

	1955, in % of 1950		
	Social product	Replacement fund	National income
In current prices	140	150	130
In comparable prices	165	160	171

The share of the national income in the social product, evaluated in current prices, dropped from 54% in 1950 to 50% in 1955, while the replacement fund rose from 45 to 50%. If the dynamics of the physical volume of the component parts of the aggregate social product were to be determined in conformity with its structure in current prices of 1955, the growth of the national income during the Fifth Five-Year Plan period would be 53% and the replacement fund — 80%. (5) Such a system for determining the dynamics of the physical volume of the aggregate social product and the national income is wrong both methodologically and from t standpoint of the conclusions that follow from it application.

The use of the method proposed by Kronrod results in a rise in the material outlays per unit output, whereas actually the level of these outla is systematically declining. The magnitude of t material outlays in the production of the social product in 1955 was 97% as compared with 1950 (160:165), that is, a decline of 3%. Yet, if Kronrod's method were used the material outlays pe unit of social product would show a rise of 9%; t alone makes us doubt the correctness of his met od.

This is the result of identifying the dynamics the social product in terms of value and in phys cal terms, even though in reality they do not coi cide. The value of a unit of the social product i 1955 was 85% as compared with 1950, while the output per unit of expended labor increased by 1 "With the growth of the productive power of lab there increases the mass of products in which a certain value, and, therefore, a surplus-value o given magnitude is embodied." (6) In the value the social product the magnitude of the transfer value of the consumed means of production decl by 6%, and in the newly created value, which co responds to the outlays of living labor, decrease by 24%. With an increase in output per unit of e pended labor by 18% during this period, the mat rial outlays declined by 3%, and the share of the national income in the physical volume of the so product rose by the same figure. Owing to the ference in the dynamics of the value and physic volume of the social product and the change of t structure, a unit of newly created value in 1955 was embodied in a net output, the volume of wh was 32% greater than in 1950; the mass of mea of production which expressed the transferred value of the consumed means of production ros 7% during these years.

Kronrod's assertion that the method used by planning and statistical agencies to determine t dynamics of the physical volume of the national come ignores the saving in living labor does no touch upon the substance of the question under sideration. The saving in material outlays, as factor making for higher rates of growth of the tional income as compared with the social prod is examined in the given case not from the asp of value and of labor outlays, but from the stan point of the volume of material values used for replacing the consumed means of production a the volume of the net output of the national

my. As pointed out earlier, in the practice of
ng and accounting, indices of the value and
cal volume of the social product and national
e are differentiated. Savings of both past and
labor are reflected in the value indices. As
dices of the physical volume, they show the dy-
s of the social product, the replacement fund
tional income as aggregates of use values.

of these indices has its own sphere of applica-
each reflects various aspects — the value and
ial — of the changes in the structure of the
product under the influence of technical pro-
and the rise of labor productivity.

development of technology and the growth of
productivity lead not to a rise but to a decline
terial outlays for the production of output,
determines the higher rate of growth of the
cal volume of the national income as com-
with the social product. In working out na-
economic development plans it is necessary
ceed from the task of ensuring higher growth
of the national income in relation to the social
ct and, from this viewpoint, to analyze the plan
ctions for the development of separate branches
conomic areas, the economic effectiveness of
ucing new technology and capital investments,
alization and the location of production and
measures of national economic importance.
ings in material outlays is the decisive, but
e only factor which determines the relation-
etween the growth rates of the social product
e national income in the process of expanded
duction. A great influence is exercised by
es in the branch structure of the national econ-
nd more thorough social division of labor, ex-
ed in the rise of new branches, greater spe-
ation and coordination of production. An
nt of these factors is also important for plan-
conomic growth rates. Changes in the branch
ure of the national economy are characterized
ise in the share of industrial branches — in-
, construction and transport — and a decrease
share of agriculture.

gross output of industry in 1959 was nearly
es greater than in 1928; the volume of capital
ments of state and cooperative organizations
sed 50 times, and freight carriage by all
of transport expanded 15 times. During this
gross output of agriculture increased approx-
ly 1.8 times, with most of the growth having
chieved after 1953. Thanks to the measures
Party and the Government for overcoming the
agriculture, its growth rates increased from
n 1950-1953 to 8.6% in 1954-1958. In 1959-
gross output of industry and capital invest-
will also rise to a greater extent than
agricultural output. In recent years the growth rates of agriculture, on the one hand, and industry and construction, on the other, have been brought closer together. But the latter still continue to develop faster than agriculture. High growth rates for industry and construction are needed to ensure technical progress and a rise of labor productivity as the basis of expanded reproduction in all branches of the national economy and a rise in the well-being of the working people.

The rise in the relative importance of industry and construction, connected with a change in the branch structure of the social product, brings about an increase in the share of the replacement fund in the physical volume of the social product. This is explained by the fact that the share of material outlays in these branches is higher than in the national economy as a whole.

Structure of the Aggregate Social Product and the National Income of the USSR in 1959
(% of total)

	Social product	National income
Total	100	100
Industry	61.3	52.7
Agriculture	17.5	20.9
Construction	10.5	10.2
Transport and communications	4.1	4.8
Trade, procurement, supply of material and equipment, etc.	6.6	11.4

In 1959 industrial output comprised 61.3% of the social product, while the share of industry in the national income amounted to 52.7%. The share of construction in the national income was likewise lower than in the social product. These two branches produce about 72% of the social product, or 2.5 times as much as agriculture, transport and communications, trade, procurements and supply; moreover the latter branches develop at a slower rate than industry and construction. Hence the tendency for a growth in the material outlays per unit of the social product and a reduction of the share of the national income in its composition, which depends on the extent of the gap in the growth rates of industry and construction, on the one hand, and agriculture, transport, communications and branches in the circulation sphere, on the other. Inasmuch as the prospect is for an increase in the share of industry and construction in the social product, the influence of factors raising the material outlays per unit of the social product will be intensified.

A change in the branch structure of the national economy affects the relationship between the growth rates of the physical volume of the social product and the national income in a direction opposite to the saving of material outlays. Owing to this, the actual gap between the growth rate of the national income and the social product is smaller than it should be under the given reduction of material outlays in separate branches of the economy. In elaborating current and, especially, long-term national economic development plans it is not enough to determine the general relationship between the growth rates of the national income and the social product; it is necessary to ascertain the influence of the factors which shape this relationship. Specifically, it is necessary to ascertain the influence exerted by the saving in material outlays on the degree of excess of the growth rates of the national income as compared with the social product, on the one hand, and the increase in the material outlays per unit of the social product owing to the change of the branch structure and the rise in the share of double counting of material outlays in the social product, on the other.

The latter circumstance, which follows from a deepening of the social division of labor, is another important factor which brings closer together the dynamics of the physical volume of the social product and the national income. The development of technology leads to the emergence of new branches, specialization of existing and new enterprises in the manufacture of separate products or various component parts of products, and increases coordination of production. These economic processes determine an increase in the turnover of means of production between separate enterprises and branches of the national economy and a rise in the share of elements of double counting of material outlays in the value and physical volume of the social product. A change in the structure of the social product, connected with the growth of the share of double counting in the value of material outlays, affects the indices of the volume of the social product, but does not influence the magnitude of the national income, owing to which there is a tendency to bring the rates of growth of the aggregate social product and national income closer together.

The relationship between the growth rates of the social product and the national income is determined by the interaction of all the above-named factors -- savings in material outlays, changes in the branch structure of the national economy and
the extent of double counting in the value of the
consumed means of production in the aggregate
production outlays. Savings in material outlay
play a decisive part in their interrelations. Th
development of machinery and improvement of
technology of production reduce material outla
for the production of goods, which determines
higher growth rate of the physical volume of th
national income as compared with the social pr
uct. But this law is not manifested equally in
ous branches of the national economy and at di
ferent stages in the development of one and the
same branch. That is why in planning the grow
rates of the social product and the national inc
it is important to take into account the distinct
features in the development of technology in va
ous branches and the specific action of the fact
which make for a rise in labor productivity an
decrease in the outlays of material resources
labor in the process of production. An increas
in the material outlays per unit of the social p
uct, owing to changes in the relationship betwe
separate branches and in connection with the
emergence of new branches and an increase in
double counting of the value of these outlays,
weakens the influence of the saving in material
lays on the growth rate of the social product a
the national income, but does not neutralize it.
From all that has been said we can draw the c
clusion that, though there are counteracting fa
tors, the saving in material outlays achieved o
the basis of a rise in labor productivity leads
higher growth rates of the national income as
pared with the social product.

Footnotes

(1) A. I. Pashkov, Ekonomicheskii Zakon
Preimushchestvennogo Rosta Proizvodstva Sr
Proizvodstva, Gosplanizdat, 1958; Ia. A. Kron
Obshchestvennyi Produkt i Ego Struktura Pri
sializme, Gospolitizdat, 1958.

(2) K. Marx, Capital, Vol. III, 1953, p. 271
[Russian edition. All quotations have been re-
translated from the Russian — Editor].

(3) Capital, Vol. I, 1949, p. 613 [Russian ed

(4) Op. cit., p. 379.

(5) The index of the physical volume of the
tional income is equal to the index of the phys
volume of the social product, multiplied by the
share of the national income in the social prod
in 1955 in current prices and divided by the sh
of the national income in the social product in
(165 x 50) : 54 = 153%. The index of the physica
volume of the replacement fund corresponding
equals (165 x 50) : 46 = 180%.

(6) K. Marx, Capital, Vol. I, 1949, p. 609
[Russian edition].

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